$2.95
CANADIAN $3.50
THE MAGAZINE FOR HOME AND HOME OFFICE
JUNE 1987
VOLUME 5
NUMBER 6

PREVIEW
NEW FROM IBM
PERSONAL SYSTEM/2

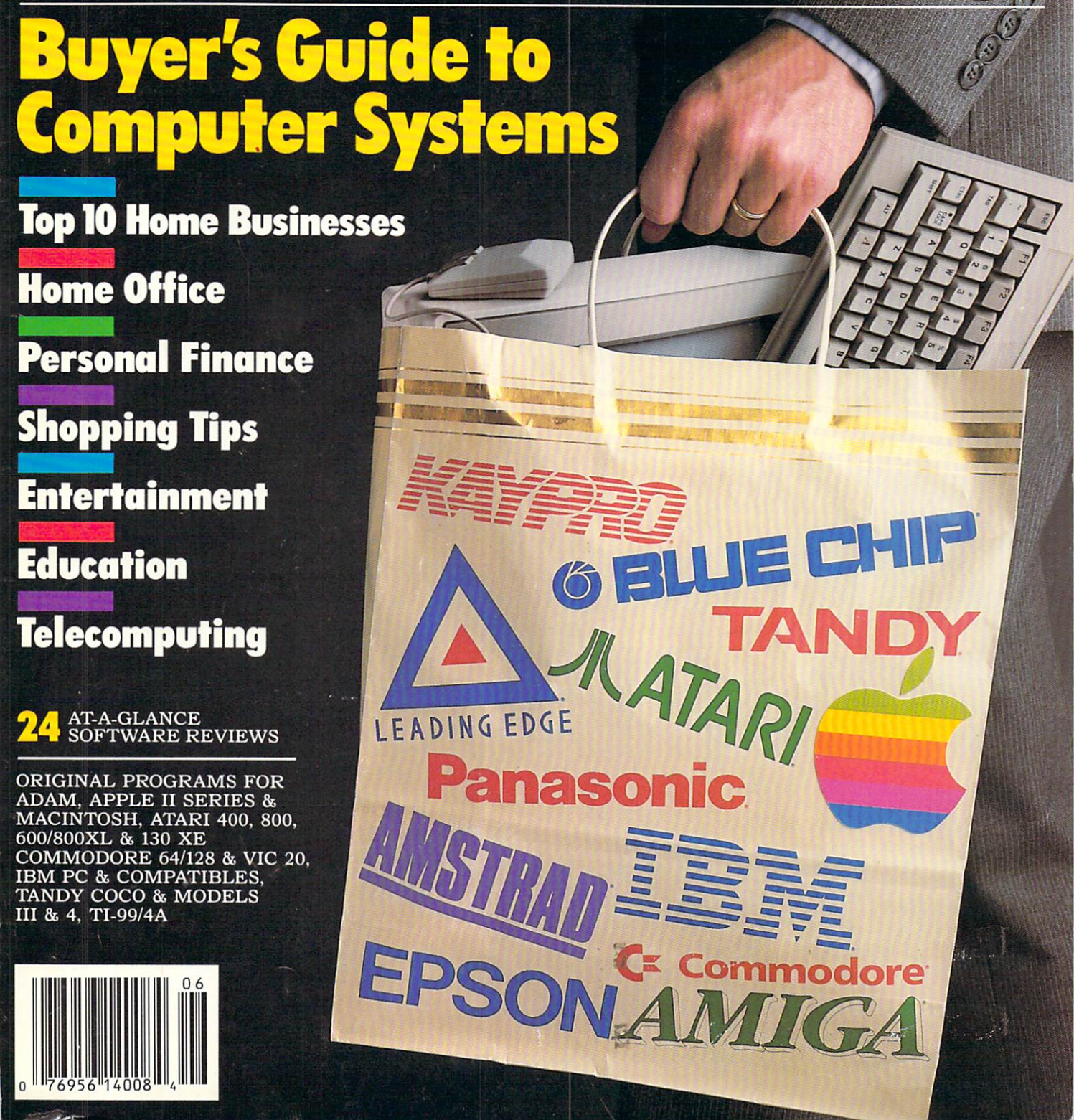
FAMILY COMPUTING

Buyer's Guide to Computer Systems

- Top 10 Home Businesses
- Home Office
- Personal Finance
- Shopping Tips
- Entertainment
- Education
- Telecomputing

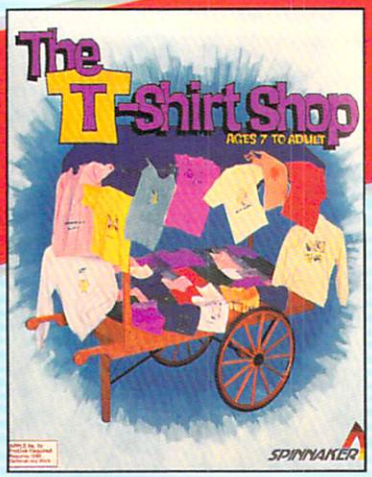
24 AT-A-GLANCE SOFTWARE REVIEWS

ORIGINAL PROGRAMS FOR ADAM, APPLE II SERIES & MACINTOSH, ATARI 400, 800, 600/800XL & 130 XE COMMODORE 64/128 & VIC 20, IBM PC & COMPATIBLES, TANDY COCO & MODELS III & 4, TI-99/4A

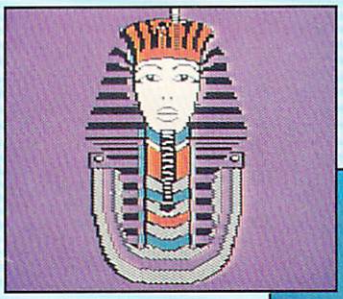


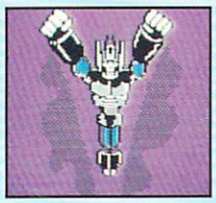
0 76956 14008 4 06

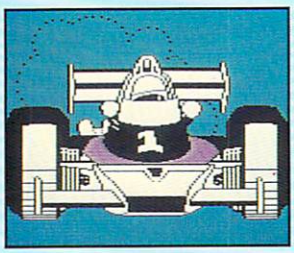
T-Shirt Shop™



How to Design Your Own T-Shirt in Five Easy Steps







1 **Get Started**
The first thing to do is to boot up T-Shirt Shop. You'll be greeted by an easy to understand menu that lets you see everything the program can do at a glance. You can LOAD pictures from the picture disk, DRAW your own pictures, TYPE in any slogan you can think of, and COLOR in your pictures.

2 **Choose a Graphic**
Now choose LOAD from the menu. You can choose from more than 50 supplied graphics. Hollywood celebrities, political and historical figures as well as plants and animals represent some of the categories included. For a change, you can draw your own picture. In either case, once you choose a picture, the outline will appear on the screen, ready to be colored.

3 **Paint It**
Here's your chance to show your artistic ability. Using the palette of colors, the brushes and the spraycans, you can paint a rainbow of color – you can even color in the picture to match your eyes! If you want, the program will automatically paint the picture with colors you choose.

4 **Add Type**
You've got a beautifully colored picture now. Go to the TYPE section, and choose from a variety of type styles. Name your picture, or attach some absurd sayings. Create catchy political slogans, humorous sayings, or something incredibly tacky.

5 **Print It**
Print your shirt design onto the special iron-on transfer paper (free sheets are included). With T-Shirt Shop, what you see on the screen is exactly what you'll get on your t-shirt. The paper will work with any ribbon – even in color – and will transfer perfectly to any t-shirt. Print your design, iron the transfer onto your shirt and you're in business. Impress your friends! Wear them into the office, to the beach, or to a wedding. T-shirts make great gifts, too!

T-Shirt Shop is the only program that allows you to design, paint and create your own t-shirts. In just minutes you'll be wearing your creations. Be the first on your block with a custom designed t-shirt, sweatshirt or even underwear...from T-Shirt Shop.

Available at fine software dealers

FOR DIRECT ORDERS ONLY CALL 1-800-826-0706. Illinois residents call 1-800-826-1330. Only Mastercard, Visa and American Express accepted for phone orders. All other inquiries please write Spinnaker Software.

© 1986 Spinnaker Software Corp., One Kendall Square, Cambridge, MA 02139 All rights reserved.

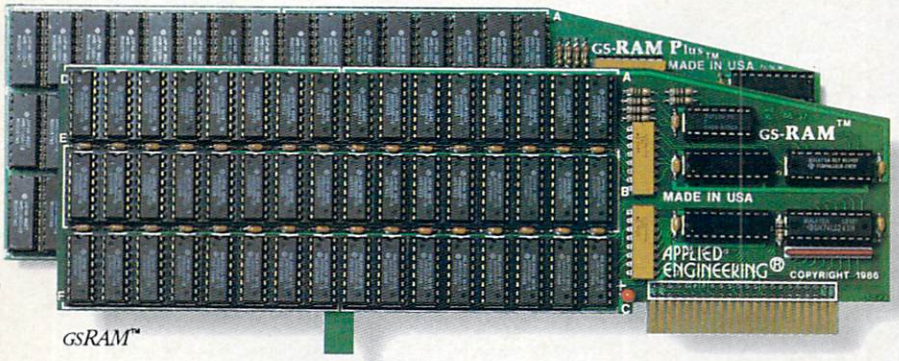
CIRCLE READER SERVICE 48

SPINNAKER®

Insist on GSRAM™ When You Buy Your IIGS™

Expand the IIGS RAM and ROM with the GSRAM or GSRAM Plus with ROM Pak. Available now with 256K to 8 MEG!

GSRAM Plus™



GSRAM™

Remember the 16K cards for the II+ and the 64K cards for the IIe? At the time, that much memory seemed like a lot. But when the owners of these memory cards came to us for more memory, many had to throw away their smaller Apple memory cards or try to sell them. Most of our customers told us that had they known about Applied Engineering's larger memory cards when they bought their Apple, they would have purchased them at the same time.

GSRAM and GSRAM Plus are available now, allowing up to 8 MEG of memory expansion. That's 8 times the memory capacity of Apple's card and just look at the benefits that only GSRAM and GSRAM Plus have over Apple's card:

- Lower cost
- Has 6 RAM banks (Apple's card has 4)
- Has memory expansion port
- Has ROM expansion port
- No configuration blocks to set
- No soldered in RAM chips
- Expandable to 8 MEG
- Expands AppleWorks internal limits
- Built-in Hi-Res self-diagnostic software
- 5 year hassle free warranty (Apple has a 90 day warranty)
- Made in USA

GSRAM for More AppleWorks Power

Only GSRAM and GSRAM Plus eliminate AppleWorks internal memory limits, increasing the maximum number of records available from 6,000 to over 25,000 and only GSRAM and GSRAM Plus increase the number of lines permitted in the word processing mode from 6,000 to over 15,000. And only GSRAM and GSRAM Plus offer a built-in printer buffer so you can continue using Appleworks while your printer is printing. GSRAM and GSRAM Plus even expand the number of lines in the clipboard from 255 to 2047 and will auto segment large files so they can be saved on two or more disks. You can even have Pinpoint or Macroworks and your favorite spelling checker in RAM for instant response. GSRAM and GSRAM Plus will even display the time and date right on the AppleWorks screen. Nothing comes close to enhancing AppleWorks so much.

Turn Your IIGS into a Giant

Simply plug GSRAM into the IIGS memory expansion slot and you've got up to *8 megabytes* of RAM at your fingertips—all of it instantly and automatically recognized by the IIGS. GSRAM is compatible with all IIGS software, including AppleWorks, as well as BASIC®, ProDos, DOS 3.3, PASCAL®, "C" and CP/M®.

Grow by Bytes or Megabytes

We offer GSRAM in two configurations so you can increase your memory 256K at a time (GSRAM) or a megabyte at a time (GS-RAM Plus). Both offer full compatibility, lower cost than other boards, and easy expandability. And both are extremely low in power consumption. A fully expanded GSRAM operates at only 375 ma, and GSRAM Plus at only 270 ma (even with 6 megabytes on board!)

GSRAM—for Normal Memory Requirements

GSRAM is available with 256K, 512K, 1 MEG or 1.5 MEG of memory already on board. If you don't need the full 1.5 MEG now, you can choose a GSRAM with less memory and expand it up to 1.5 MEG in the future—or upgrade to GSRAM Plus for a small charge.

"In quality, performance, compatibility, expandability and support, Applied Engineering's GSRAM and GSRAM Plus are number one."

Steve Wozniak, the creator of Apple Computer

With an optional piggyback card, you can expand GSRAM even higher than 1.5 MEG! (Other cards are only expandable to 1 MEG.)

GSRAM Plus—for Growing by Leaps and Bounds

GSRAM Plus is the first Apple memory card to use 1 MEG RAM chips on the main board. It's available with 1 to 6 MEG on board. If you don't need the whole 6 MEG now, you can buy a GSRAM Plus with less memory and easily expand it in the future.

GSRAM Plus can be expanded up to 8 MEG with an optional piggyback card.

Easy Expansion

Both GSRAM and GSRAM Plus use standard RAM chips that are readily available and just plug right in. So unlike other cards, you'll find expanding your GSRAM or GSRAM Plus easy, convenient and very economical. And with our optional ROM expansion module you can even increase the IIGS's ROM space and all in just one slot.

Quality and Support of the Industry Leader

Applied Engineering is the largest supplier of Apple peripherals in the world. We *invented* the first large RAM cards for the Apple. With a 5-year "no-hassle" warranty and outstanding technical support, you can be sure GSRAM and GSRAM Plus will deliver the performance you're looking for—or return them within 15 days for a full refund.

GSRAM with 256K	$169
GSRAM with 512K	$219
GSRAM with 1 MEG	$299
GSRAM with 1.5 MEG	$379
GSRAM with 2-8 MEG	CALL
GSRAM PLUS with 1 MEG	$459
GSRAM PLUS with 2 MEG	$759
GSRAM PLUS with 3-8 MEG	CALL

Order today!

See your dealer or call Applied Engineering today, 9 a.m. to 11 p.m. 7 days. Or send check or money order to Applied Engineering. MasterCard, VISA and C.O.D. welcome. Texas residents add 6¼% sales tax. Add $10.00 outside U.S.A.

APPLIED ENGINEERING™

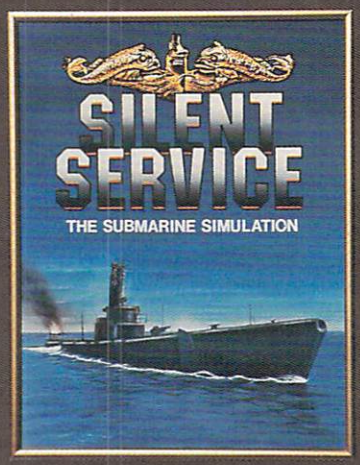
The Apple enhancement experts.

(214) 241-6060

P.O. Box 798, Carrollton, TX 75006

CP/M is a registered trademark of Digital Research, Inc.

Simply The Best
Submarine Simulation In The World!



★★★★★

CRITICALLY ACCLAIMED

"A superior product" (COMPUTE)
"By far the best submarine simulation" (ANALOG)
"Another masterpiece from MicroProse" (COMMODORE MAGAZINE)
"Realistic action . . . outstanding graphics" (RUN)
"Complex and absorbing . . . a thoroughly enjoyable game" (A+)
"One of the best simulations I've ever seen" (COMPUTER GAMING WORLD)
"You can almost smell diesel oil and feel the deck rolling beneath your feet" (ANTIC)

INTERNATIONAL AWARD WINNER

USA: *"BEST SIMULATOR"*
(Critics' Choice Award, Family Computing)
USA: *"BEST ADVENTURE GAME FOR THE HOME COMPUTER"* (Charles Roberts Award For Outstanding Achievement, Academy of Adventure Gaming Arts & Designs)
ENGLAND: *"BEST SIMULATION"*
(Oscar Award, Commodore Computing International)
FRANCE: *"BEST SIMULATION"*
(Golden Tilt Award, Tilt Magazine)
GERMANY: *"SIMULATION OF THE YEAR"*
(Best Games Of The Year Awards, Happy Computer)

Available NOW From Your Favorite "Valued MicroProse Retailer" (VMR).
Call us for the VMR nearest you!

For ALL Popular Computers At A Suggested Retail Of Only $34.95:
- Commodore 64/128
- Atari XL/XE
- IBM-PC & compatibles (supports EGA 16-color graphics)
- Apple II+/e/c (enhanced sound for Mockingboard A, B or C).

And At A Suggested Retail Of Only $39.95 With Unique Machine-Specific Graphics and Sound Enhancements For:
- Amiga
- Atari ST
- Apple IIGS

MICROPROSE
SIMULATION • SOFTWARE
120 Lakefront Drive • Hunt Valley, MD 21030 • (301) 771-1151

Commodore, Amiga, Apple, IBM and Atari are registered trademarks of Commodore Electronics Ltd., Commodore-Amiga Ltd., Apple Computer Inc., International Business Machines Inc., and Atari Inc., respectively.

CIRCLE READER SERVICE 27

PUBLISHED BY SCHOLASTIC INC.

JUNE
1987

VOLUME 5
NUMBER 6

FAMILY COMPUTING

COVER STORY
31
BUYER'S GUIDE TO COMPUTERS
What do you need in a system, and how much do you want to spend? Use this Buyer's Guide to evaluate 17 popular models, comparing such features as memory, sound, graphics resolution, bundled software and hardware, and list price.

HOME OFFICE
12
MAKING BUSINESS FORMS
Put your IBM PC or compatible to work generating letterheads, invoices, and other specialized forms with programs such as *EZ-Forms Executive*, *FormWorx*, and *LaserWare*.

PERSONAL FINANCE
16
YOUR MONEY AND YOUR MAC
How to use *MacMoney* and the power of your Macintosh to perform sophisticated record keeping—and make financial documents look like a million bucks. The first in a series of finance-software reviews.

EDUCATION
8
HOME-SCHOOL CONNECTION: PLANNING THE FUTURE
An introduction to software that can help college-bound students and their parents make the best choice from thousands of colleges and career possibilities.

TELECOMPUTING
22
GENIE VERSUS COMPUSERVE
Which is more important to you—GEnie's lower cost or CompuServe's wider range of offerings? A comparison of features on the two electronic networks, including non-prime connect rates and news, reference, travel, and financial sections.

LIFESTYLE
39
TOP 10 COMPUTER-BASED HOME BUSINESSES
Ten ways to make money with your computer, plus profiles and comments from people who've succeeded in those businesses.

SOFTWARE
43
GOT SOMETHING TO ANNOUNCE, PROMOTE, SELL?
Announcing a sale, planning a party, or running for office? Here are powerful, easy-to-use printout programs that enable you to enter the world of graphic art—and get your message on paper.
PLUS: PRINTOUT SOFTWARE CHART

46
SHOPPING FOR SOFTWARE
Take these practical steps *before* you spend money on software— learn how to evaluate stores, salespeople, and your own needs, so you'll be satisfied with the programs you buy.

PROGRAMS IN THIS ISSUE
66
HOME-HELPER PROGRAM
Keep telephone messages and family notices organized with *Home Message Center*. Program for Apple, Commodore, IBM & compatible, and Tandy computers.*

76
FUN-AND-GAMES PROGRAM
Maneuver your ship through an asteroid belt in *Space Race*. Program for Apple, Atari, Commodore, IBM & compatible, and Tandy computers.*

80
FUN-AND-GAMES PROGRAM
Set out on a *Kanium Quest* with your Adam, Apple, Atari, Commodore, IBM or compatible, Tandy, or TI computer—and make scientific history when you find the mysterious compound! *

*See program for specific computer models and hardware requirements.

PREVIEW
48A
NEW FROM IBM
IBM unveils its long-awaited line of Personal System/2 computers. Model 30, with enhanced memory, speed, and graphics, could meet your home/home office needs.

DEPARTMENTS
4
EDITOR'S NOTE

6
LETTERS

18
ENTERTAINMENT

26
MACHINE SPECIFICS

49
SOFTWARE GUIDE
Brief descriptions and ratings for 24 new and/or noteworthy programs for Education/Fun Learning, Home Business & Productivity, and Entertainment.

55
SOFTWARE REVIEWS
In-depth reviews of several programs in the Guide.

59
K-POWER
How to sell your game to a software publisher; plus strategy and hints for *Aliens*, *Moonmist*, *Ultima IV*, and *The Bard's Tale II*.

63
THE PROGRAMMER

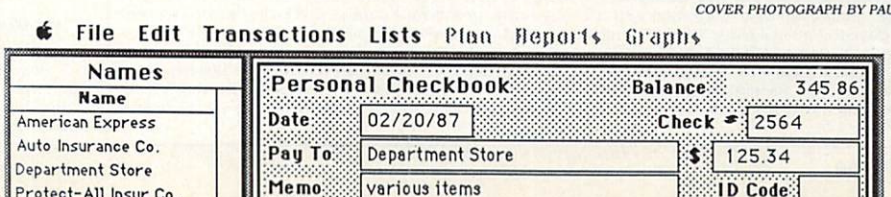
86
CLASSIFIEDS

FAMILY COMPUTING (ISSN 0738-6079) is published monthly by Scholastic Inc., 730 Broadway, New York, NY 10003. Subscriptions: in the U.S. and possessions, 12 issues for $19.97; outside the U.S. add $6 (surface mail) or $25.97 (airmail). Office of publication: 351 Garver Rd., P.O. Box 2700, Monroe, OH 45050-2700. Second-class postage paid at Monroe, OH 45050-9998 and additional offices. POSTMASTER: Send address changes and notice of undelivered copies to FAMILY COMPUTING, P.O. Box 2511, Boulder, CO 80302. Printed in U.S.A. Copyright © 1987 by Scholastic Inc. All rights reserved.

COVER PHOTOGRAPH BY PAUL D'INNOCENZO

Page 48A

Page 31



Page 16

EDITOR'S NOTE
THE LONG VIEW

There are days when, based on my mail, I feel like the Miss Lonely Hearts of computer owners. The letters that evoke these feelings in me are almost always from people who bought a computer based only on price. And I don't know how to come up with helpful answers.

When one of these letters arrives—full of questions about where to buy software, how to find help, what kinds of peripherals are available—I want to either groan or scream. Inevitably my mind turns to late night TV commercials—the ones for warehouse sales of computers that never or only barely appeared on store shelves.

Every time I think of someone buying one of those defunct machines, I sigh: Another potentially confused letter-writer!

The horror is not the letters I receive. It is instead the despair the writers feel and the despair, in turn, I feel at not being able to offer help. And it is also one more blow to the whole computer industry and to the reputation of computers for home use. We all end up getting damaged and damned.

After I'm done feeling sorry for these poor souls, the anger sets in. Buying a computer is a major decision. It requires *and* deserves long and careful consideration. Thoughtful, cautious computer shoppers rarely seem to regret their decisions. Even if their model or brand eventually goes out of production or becomes outdated by newer technology, there's probably been a long-standing and consistent record of satisfactory service.

Careful shoppers often get good use out of their computers and become careful shoppers again, stepping up to a new model or a second machine. Their letters are likely to describe the *pleasure* they get from computing.

If there's one thing that successful computer owners and successful computer manufacturers have in common, it's the long view. That was what impressed me most about IBM's new line of computers, the Personal System/2. While the rest of the world seemed to be focused on "clone killing" and price wars, IBM was looking at the future and long-term needs of its existing and potential customers. When I shared these thoughts with a friend, he said, "You know, I'm in awe—it just may be the most Japanese thing an American company has done."

Right now, we don't know how IBM's plan will work out. But we do recommend the long view, especially when you're shopping for a computer. Use our Buyer's Guide to Computers to help you make your decision and base it on your current and future needs.

We at FAMILY COMPUTING take the long view, too. That's why we stick with you for all your computing needs at home. We're in this together, for the long haul.

Claudia Cohl

—CLAUDIA COHL
EDITOR-IN-CHIEF

SCHOLASTIC INC. CORPORATE:
Maurice R. Robinson, founder, 1895-1982
PRESIDENT, CHIEF EXECUTIVE OFFICER, AND CHAIRMAN OF THE BOARD: Richard Robinson
VICE-CHAIRMAN OF THE BOARD EMERITUS: Jack K. Lippert

SCHOLASTIC NATIONAL ADVISORY COUNCIL: Dr. Sidney P. Marland, Jr., chairman, former superintendent of schools and U.S. Commissioner of Education • Dr. Gregory Anrig, president, Educational Testing Service • Elaine Banks, past president, National Association of Elementary School Principals • Michael J. Guerra, executive director, secondary schools, National Catholic Educational Association • Dr. Lola Jane May, mathematics consultant, Winnetka, Illinois, public schools • Dr. Wilson Riles, former superintendent of public instruction, State Department of Education, California • Dr. Richard Ruopp, president, Bank Street College of Education, New York, New York • Patsy R. Scales, library and media specialist, Greenville (South Carolina) Middle School • Elaine Steinkemeyer, president, The National PTA

FAMILY COMPUTING®

730 Broadway, New York, NY 10003
(212) 505-3580

EDITOR-IN-CHIEF: Claudia Cohl
DESIGN DIRECTOR: Vincent Ceci

EDITORIAL
SENIOR EDITORS: Nick Sullivan, David Hallerman
MANAGING EDITOR: Charlotte Pierce
ASSOCIATE EDITOR: Bernadette Grey
COPY EDITOR: Stephanie Esters
RESEARCHER: Amal Morcos
EDITORIAL COORDINATOR: Andrew Torres
CONTRIBUTING EDITORS: Shay Addams, Henry Beechhold, James Delson, Charles H. Gajeway, Roger Hart, Stephen Miller, Tony Morris, Robin Raskin, Steve Morgenstern, Patrick Spera

ART
DESIGN ASSOCIATE: James C. Montalbano
DESIGN ASSISTANTS: Doreen Maddox, Susan Taylor

TECHNICAL
TECHNICAL DIRECTOR: Lance Paavola
MANAGING TECHNICAL EDITOR: Steven C.M. Chen
TECHNICAL EDITORS: Pasquale M. Cirullo, Joey Latimer
TECHNICAL ASSOCIATE: Karen Kane

PUBLISHING
PUBLISHER: Shirrel Rhoades
CONTROLLER: Robert H. Bellone
PRODUCTION MANAGER: David J. Lange
CIRCULATION DIRECTOR: Deede Dickson
CIRCULATION MANAGER: Steven R. Aster
ASSISTANT CIRCULATION MANAGER: Nancy Lewis Miranda
PROMOTION/PRODUCTION COORDINATOR: Patricia Neal
CIRCULATION ASSISTANT: Patricia Nahmias

ADVERTISING SALES OFFICES
ASSOCIATE PUBLISHER:
Paul W. Reiss (212) 505-3585
EASTERN DISTRICT MANAGER:
Jonathan Wolpert (212) 505-3628
MID-ATLANTIC DISTRICT MANAGER:
Susan Pienkos (212) 505-3588
WESTERN DISTRICT MANAGER:
Pamela Taylor
480 California Ave., Suite 203
Palo Alto, CA 94306
(415) 322-1015
MIDWESTERN DISTRICT MANAGER:
Sharon O'Brien
400 N. Michigan Ave., Suite 1104
Chicago, IL 60611
(312) 467-6888
ADVERTISING SALES COORDINATOR:
Terry Bova (212) 505-3630
SALES SECRETARY: Mark Walter
TELEMARKETING DIRECTOR:
Greg Rapport (212) 505-3587
TELEMARKETING REPRESENTATIVE:
Dan Nasser (212) 505-3636
TELEMARKETING REPRESENTATIVE:
Rosemary Corr (212) 505-3629

NEED SUBSCRIPTION ASSISTANCE?
Please send change of address to FAMILY COMPUTING, P.O. Box 2511, Boulder, Colorado 80302. For other subscription problems, please write to FAMILY COMPUTING, 730 Broadway, New York, New York, 10003, Attn: Customer Service.

The Tandy® 1000 EX. The lowest-priced PC compatible made in America.

Includes Personal DeskMate Software

$599

Once you know the score, it's easy to choose a personal computer. We build the high-speed Tandy 1000 EX in our own manufacturing facilities, and back it with nationwide support. We include 256K memory, a built-in disk drive, Personal DeskMate™ six-in-one software and MS-DOS® operating system, so all you add is a monitor. Run today's most popular personal finance, home education and entertainment software, as well as top business programs. Get *your* Tandy 1000 EX today at any Radio Shack.

Price applies at Radio Shack Computer Centers and participating stores and dealers. Monitor and monitor platform sold separately. Personal DeskMate/TM Tandy Corporation. MS-DOS/Registered TM Microsoft.

Radio Shack®

The Technology Store™

A DIVISION OF TANDY CORPORATION

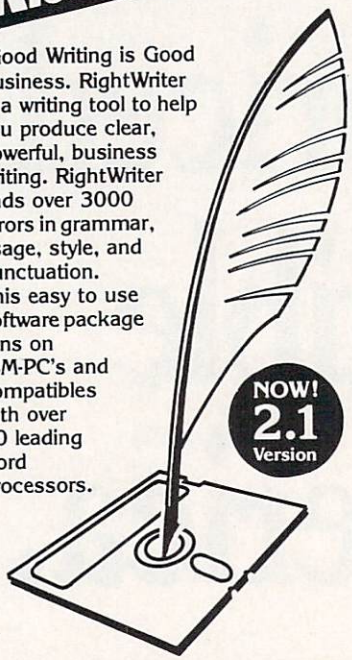
CIRCLE READER SERVICE 51

See Us At COMDEX/Spring '87 · Booth 2957

THE Expert System for Good Writing

RIGHTWRITER®

Good Writing is Good Business. RightWriter is a writing tool to help you produce clear, powerful, business writing. RightWriter finds over 3000 errors in grammar, usage, style, and punctuation. This easy to use software package runs on IBM-PC's and compatibles with over 20 leading word processors.



Here is what the experts say:

"... a Must Buy! ... Four stars throughout."
— Family Computing 12/86

"RightWriter is an excellent, lowcost, eye-opening software package that lets you see your writing through the "eyes" of an impartial judge..."
— Inside Word Management

"CBG&H's editors loved RightWriter ... It's a great guide for the businessperson, freelance writer, and student alike. We highly recommend it."
—Computer Buyer's Guide & Handbook 6/86

"RightWriter is a fast, handsomely packaged, easy to use program..."
— PC Magazine 5/86

"I recommend RightWriter. The program is a simple, time efficient aid to clear concise writing."
— IEEE Software 9/86

Available from your local dealer or:

RIGHTSOFT INCORPORATED
2033 Wood Street, Suite 218
Sarasota, FL 33577

ONLY $95.00

1 (800) 992-0244
(in Fla. (813) 952-9211)
Add $4.00 shipping.

30 Day Money Back Guarantee

CIRCLE READER SERVICE 43

LETTERS

READER APPRECIATES MS-DOS ARTICLES

I enjoy reading FAMILY COMPUTING each month; keep up the good work. I particularly liked your article on MS-DOS tricks (October 1986), and would like to see more articles like that. I'm also interested in an article on how computer-language compilers, such as Turbo Basic and QuickBASIC, are used. VERNON SHIRLEY
Mattoon, Illinois

EDITOR'S NOTE: *Keep an eye on Steve Morgenstern's MS-DOS column and Henry Beechhold's IBM column in the Machine Specifics department, and watch the Home Office department for more on MS-DOS tricks and software.*

HIS TYPE OF BUSINESS

I am a professional proofreader presently working for two employers—a publisher (part-time) and a typographer (full-time). I am seriously planning to work on my own as a proofreader/typesetter.

What I have in mind is computerized proofreading and typesetting, using a spelling checker or similar device.

When a manuscript is sent to me, I would word process it, edit it with a spelling checker, and typeset it before sending it to my client for layout and pasteup.

I would like to find out what kind of computer and accessories are needed for word processing and typesetting. Also, can I electronically transmit my finished product to the client? And, if so, what kind of equipment will I need for that part of the operation? GEORGE A. BOAMAH
Staten Island, New York

EDITOR'S NOTE: FAMILY COMPUTING *has recently published articles on word processing ("Guide to Writing with Computers" series, August 1986–March 1987); typesetting (Home Office, "Her Type of Business," April 1987; and "Top 10 Computer-Based Home Businesses" in this issue); and telecommunication (in each month's Telecomputing department, and occasional features). Articles on home-business subjects appear regularly. Keep in mind that unless you send or deliver the actual type to your client, files that you format and transmit will contain typesetting codes. Those files could be transmitted to a typesetter, who would return camera-ready type, minus the codes, to your client.*

THE GREAT COMPUTER SEARCH

I am 43 years old, married, and the father of two. I have a part-time retail store, and want a computer—and that's where my problem begins!

I have been a subscriber of FAMILY COMPUTING for approximately a year and a half, trying to "learn" about computers. Your magazine has been the best I have encountered—the beginner is covered, and the more advanced "computer nut" is covered. All the other magazines I've read get too technical or favor a certain type of machine.

I recently walked into the only two independent computer stores in Lancaster County (that really serve beginners), and only one of them tried to help. Sure, we have the chain stores, but the "big guys" can make it seem even more intimidating!

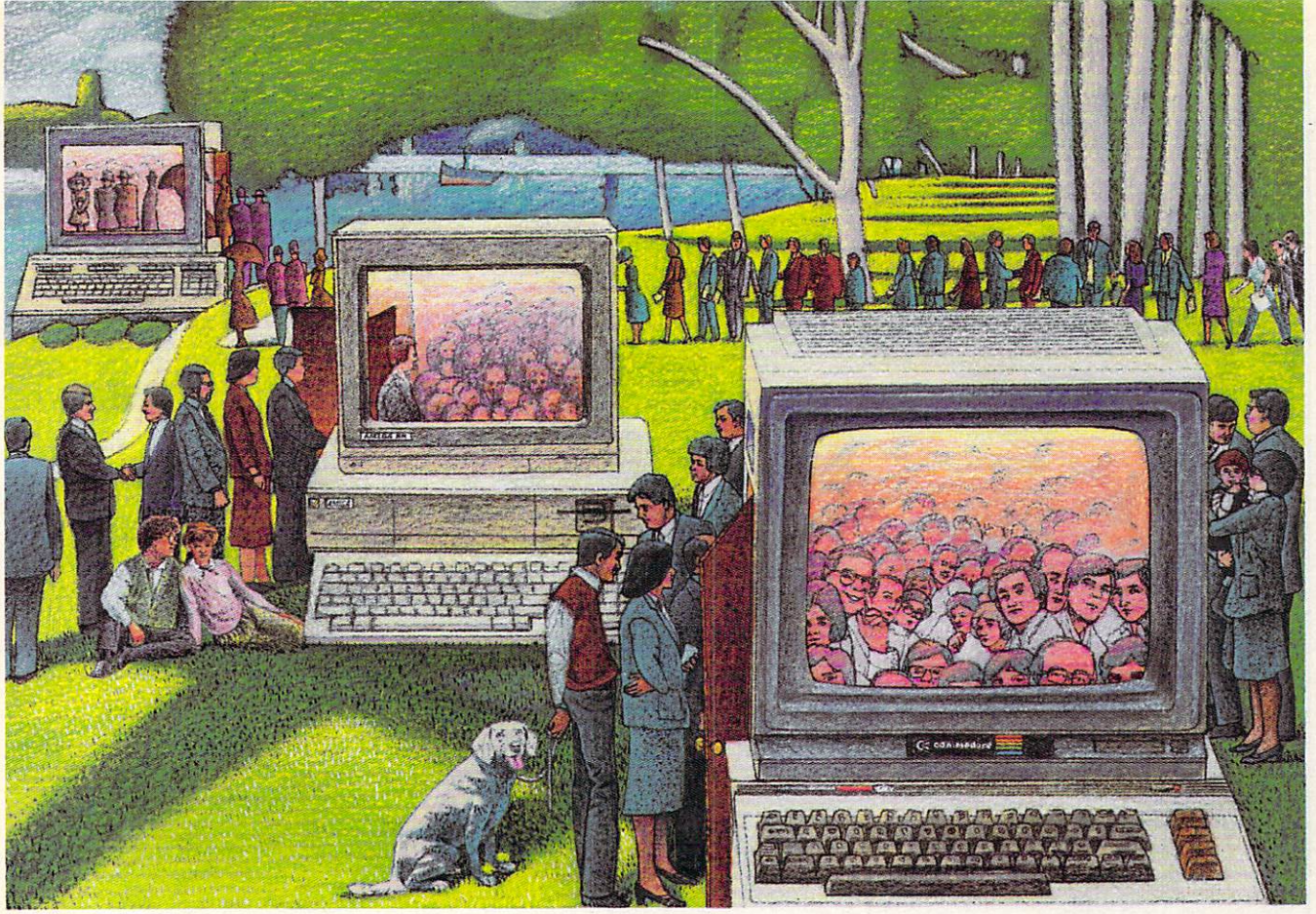
I decided I really want an Atari 1040ST, color monitor, and eventually, a color printer of some kind. Then Radio Shack comes out with their Tandy 1000 SX—what do I do now? The Tandy is expandable and has IBM compatibility and support—wow, just what I want! The Atari 1040ST is powerful, fast, and easy to use—wow, just what I want! "Say, Roy," a friend tells me, "I heard Hyundai is coming out with a PC compatible, really inexpensive—that's what *I'm* waiting for!"

I'll let you folks know what I end up buying and when, and why I got it! ROY C. MIESSE, III
Lititz, Pennsylvania

CORRECTIONS

May 1987, Table of Contents
Page-number corrections are as follows: Telecomputing, page 18; Lifestyle, page 40; New Hardware, page 42.

May 1987
The correct number for BCE (page 40) is (617) 542-4414.



USE THE BRAINS YOUR COMMODORE WASN'T BORN WITH.

Right at Your Fingertips in CompuServe's Commodore® Forums

Our Commodore Forums involve thousands of Commodore users worldwide. These forums show you just how easy and fun it is to get the most from your Commodore Computer.

The Commodore **Communications Forum** provides the latest news on communications software and advice on effective telecommunications.

The Commodore **Programming Forum** supports programmers and developers of Commodore 8-bit computers.

The Commodore **Arts and Games Forum** is for all Commodore 8-bit computers, concentrating on music, graphics and games.

The Commodore **Amiga® Forum** is the national resource for all business and entertainment applications in the Amiga community.

Easy access to free software, including FREE uploads.

- *Download first-rate, non-commercial user-supported software and utility programs.*
- *Upload your own programs free of connect time charges.*
- *Take advantage of CompuServe's inexpensive weeknight and weekend rates (when forums are most active, and standard online charges are just 10¢ a minute).*
- *Go online in most major metropolitan areas with a local phone call.*
- *Receive a* ***$25.00 Introductory Usage Credit*** *when you purchase your CompuServe Subscription Kit.*

Information you simply can't find anywhere else.

Use the Forum *Message Board* to exchange mail with fellow members. Join ongoing, real-time discussions in a Forum *Conference*—with Commodore software publishers, developers and technical experts. Scan Forum *Data Libraries* for free software, documentation and contributions from Commodore enthusiasts.

Enjoy other useful services, too. Like electronic editions of your favorite magazines, newsletters and articles, including Family Computing, OMNI Online and the Electronic Gamer.™

All you need is your Commodore computer and a modem...or almost any other personal computer.

To buy your Subscription Kit, see your nearest computer dealer. Suggested retail price is $39.95. To receive our free brochure, or to order direct, call 800-848-8199 (in Ohio, call 614-457-0802). If you're already a CompuServe subscriber, type GO CBMNET (the Commodore Users Network) at any ! prompt to see what you've been missing.

CompuServe®

Information Services, P.O. Box 20212
5000 Arlington Centre Blvd., Columbus, Ohio 43220

800-848-8199

In Ohio, call 614-457-0802

An H&R Block Company

Commodore is a registered trademark of Commodore Electronics Limited
Amiga is a registered trademark of Commodore-Amiga, Inc.

HOME-SCHOOL CONNECTION

PLANNING THE FUTURE
Software to Help Your Children Choose a College and a Career

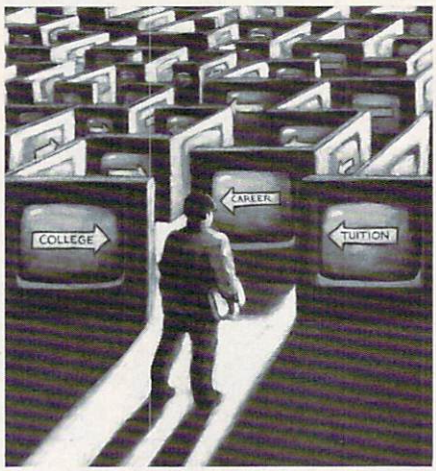
BY TONY MORRIS

"What am I good at? What do I want to do with the rest of my life? Where will I go to college?" As a child approaches his or her senior year of high school, questions like these take on a special urgency. They are difficult questions to answer, not only because they are so important, but also because they lead to so many choices. There are thousands of colleges and tens of thousands of careers. To make matters worse, most children—and parents—suspect that there must be one perfect college and one perfect career—if we could just find them! Well, the myths of a perfect college and a perfect career are just that—myths. But the bewildering array of colleges and career alternatives is real. Most college-bound students need all the help they can get in boiling down the choices.

Many of us have had experience with college-selection books, which can be very helpful. But when a high schooler is considering any and all colleges across the country, those books can be overwhelming. Just a couple of years ago, my daughter, Anne (now a freshman at the University of Michigan), tried to choose a college by thumbing through such books. One night, when I walked into our den, Anne looked up from a stack of books and, out of frustration, announced, "Dad, I've decided: I'm not going to college."

NORTH, SOUTH, EAST, OR WEST?

Since then, I've discovered that software is admirably suited to provide college- and career-selection assistance. For years, many schools have been providing their students access to computers that offer this kind of help. Today, there are also excellent programs for home use that can help the college-bound plan for the future. One example is *Peterson's College Selection Service* (Peterson's Guides; [800] EDU-DATA),



available for the Apple II series, IBM PC/PC XT, and TRS-80 III/4. Using the software's detailed menus, your child can identify the features he or she considers ideal in a college environment.

Let's say that your teenager wants a moderately selective, four-year public college or university that costs less than $5,000 a year (for state residents) and offers an honors program and study abroad. According to *Peterson's*, there are lots of those around—284 to be exact. Well, if the truth be known, it would be nice if the campus were co-educational: Now the options are down to just 79. *Peterson's College Selection Service* has eliminated 95 percent of all four-year colleges. And just as the software helps you whittle down the considerable number of alternatives, it gives you a more comprehensive list of colleges from which to choose—a nice double benefit!

Whatever your child's preferences, *Peterson's College Selection Service* makes it easy to zero in on the most appropriate colleges in just a few minutes. (The search described above took just five minutes from start to finish.) The easy-to-use menus are a reminder of features to consider, and your child can always back up and change his or her decisions (a nice option when your fussy son discovers that he's eliminated *all* colleges from his pool!). When ready, your child can call up not only a listing of colleges that meet predetermined criteria, but also their page numbers in the accompanying book, *Peterson's Guide*. Included in the package, this massive book provides detailed descriptions of each college.

Actually, there are two Peterson's college-selection packages—one for four-year colleges and another for two-year colleges. Both software packages are outstanding in every sense with one possible exception: They are relatively expensive. The four-year package costs $159; the two-year package is priced at $109.

Using a modem, your child might be able to cut costs somewhat by accessing *Peterson's* entire data base through one of the several national networks. Knowledge Index and CompuServe Information Service are two on-line networks that provide access to the data base to subscribers for a connect-rate fee of $6–$12.50. (On Knowledge Index, the data base can be accessed by typing EDUC2, while on CompuServe, by typing GO PCG.)

Another package, *The Perfect College* (Mindscape; [312] 480-7667), is an incredible bargain for just $20; it's available for the 64K Apple, C 64/128, IBM PC/PC*jr*, and Macintosh. For that price, you'd expect some limitations—and you'd find them. *The Perfect College* covers only accredited four-year colleges in the United States, sticks to pretty basic selection criteria, and doesn't include a printed guide.

There's also an element of uncertainty about *The Perfect College*. Users don't know until the end how many colleges are left in their pool (if any!) or which ones they are. But the final list of colleges includes not only an "A list" of those that match your selection criteria exactly, but also a "B list" of others that come very close. If your child's preferences are fairly straightforward, and if he or she is willing to spend a bit more time with a series of searches, *The Perfect College* is a great help. →

ILLUSTRATION BY THOMAS THORSPECKEN

TONY MORRIS *is a contributing editor of* FAMILY COMPUTING.

Why limit their education?

If your kids have a computer, they should have the Grolier Online Encyclopedia*—the online edition of the Academic American Encyclopedia.

The Grolier Online Encyclopedia is updated quarterly with the latest, most time-sensitive information. And finding facts is faster and easier online. At your fingertips are more than 31,000 articles on the most contemporary issues in science, technology, politics, business and social sciences. Plus plenty of easy-to-understand reference features.

When you buy a one-year, renewable subscription to the Grolier Online Encyclopedia, you also get the Grolier Users Guide, a lifetime subscription to CompuServe (for members in good standing), including $15 worth of online usage time, the CompuServe Users Guide and a free subscription to the monthly newsmagazine, *Online Today*. All for just $49.95. Usage rates for standard online time are just 10¢ a minute.

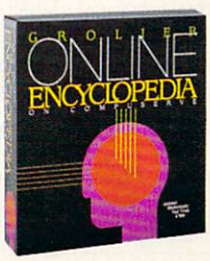
All you need to access this unlimited world of information is a modem and just about any home computer.

No matter what you've given your kids to help improve their education, they shouldn't be without the unlimited advantages of the most versatile, powerful and current home encyclopedia.

Plus CompuServe, the world's premier online information service.

Visit your computer dealer today. To order direct, or for more information, call or write:

CompuServe®



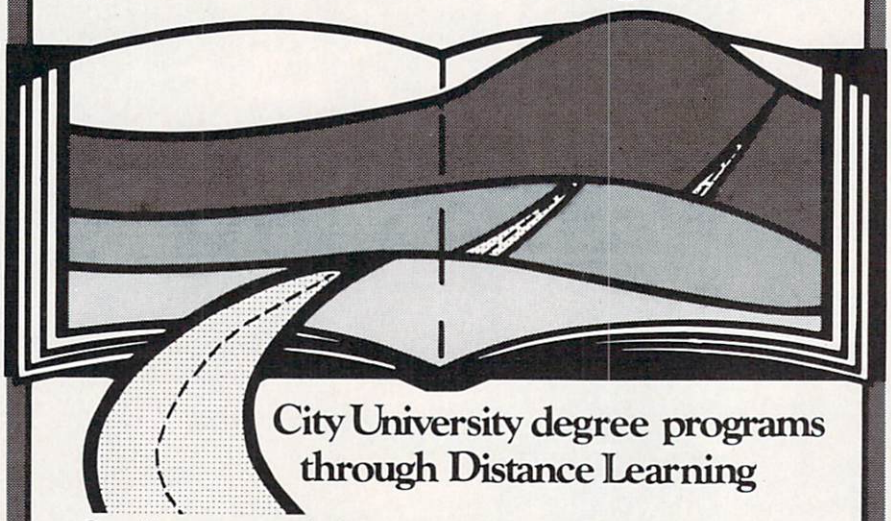
*Grolier Online Encyclopedia is a trademark of Grolier Electronic Publishing, Inc.

1-800-848-8199 In Ohio, call 614-457-0802
CompuServe Information Services, P.O. Box 20212, 5000 Arlington Centre Blvd., Columbus, OH 43220

An H&R Block Company

CIRCLE READER SERVICE 12

Don't let distance keep you from learning...



City University degree programs through Distance Learning

Quality programs in the convenience of your own home or office

An instructor is assigned to each student for each course

Turn in course work through electronic mail with a personal computer, or through regular mail service

Distance Learning removes the barriers to higher education posed by location, transportation and daily schedules.

Degree Programs available through Distance Learning

Bachelor of Science in:
- Accounting
- Business Administration
- Fire Command Administration
- Health Care Administration
- Individual Financial Planning
- Law Enforcement Administration
- Management Specialty
- Shipyard Management
- Telecommunications Management
- General Studies

Master of Business Administration in:
- MBA
- Health Care
- Individual Financial Planning
- Information Systems
- Technology/Engineering Management
- Telecommunications Management

Master of Public Administration in:
- MPA
- Criminal Justice
- Fire Command

CITY UNIVERSITY

City University is a leader in adult education with instructional sites in the U.S., Canada and Switzerland, and is accredited by the Northwest Association of Schools and Colleges.

For more information about these programs complete and return this coupon to:
Distance Learning Center, City University, 16661 Northup Way, Bellevue, WA 98008

Please send me the following material: ☐ Undergraduate Catalog ☐ Graduate Catalog

Name _____

Address _____ Phone ( )_____

City _____ State _____ Zip _____

CIRCLE READER SERVICE 9

HOME-SCHOOL

SCHOLARSHIPS OR GRANTS?

Identifying a pool of possible colleges is just your child's first step. Then there's always the question, "Can I afford to go there?" Here, too, the computer can be helpful. Both *Peterson's College Selection Service* and *The Perfect College* let users select colleges that fall within a given cost range. But other software provides even more assistance in determining the amount of financial aid needed and helps locate obscure sources of aid that may make it possible for your child to attend a more expensive college.

Again, the top of the line is *Peterson's Financial Aid Service* ($195; Apple II series, IBM PC/PC XT) which does almost everything you could expect. It first provides an estimate of the amount of money your family should be prepared to contribute toward your child's college costs. Then, it can determine the average cost of attending various types of colleges in a particular state or region of the country. If your child has a particular college in mind, he or she can get an estimate of the cost of attending that college, an indication of the amount of financial aid needed, and an estimate of the likelihood of receiving the necessary financial aid from the college.

This is all tremendously helpful in sketching the boundaries of college costs, but *Peterson's Financial Aid Service* offers more. If your child is of Lithuanian descent, or a Methodist, or a soapbox derby competitor, or any of a hundred other things, the software will identify otherwise obscure private scholarships for which he or she might be qualified. And the enclosed, printed *College Money Handbook* provides answers to just about any remaining questions you or your student might have.

ESQUIRE, C.P.A., D.D.S., OR M.D.?

Now that your teenager has a list of potential colleges and respective costs, in what areas of study will he or she concentrate? Again, the computer can be of some help. It's worth noting that many students change their majors several times during their undergraduate years.

However, it's still worthwhile to narrow the range of possibilities, and *Peterson's Career Planning* package (64K Apple; $245) is an ab-

solutely superb (but again expensive) place to start. Successful career planning with or without a computer starts with an understanding of abilities, interests, and preferences. Not surprisingly, *Peterson's Career Planning Service* starts with a series of exercises devoted to exploring these aspects. This portion of the program can take several hours to complete, but the time spent is richly rewarded in the second portion of the program where the software matches your child's personal assessment to the requirements and characteristics of more than 600 occupations stored in the data base. The resulting list of several dozen occupations forms an excellent starting point for thinking about careers.

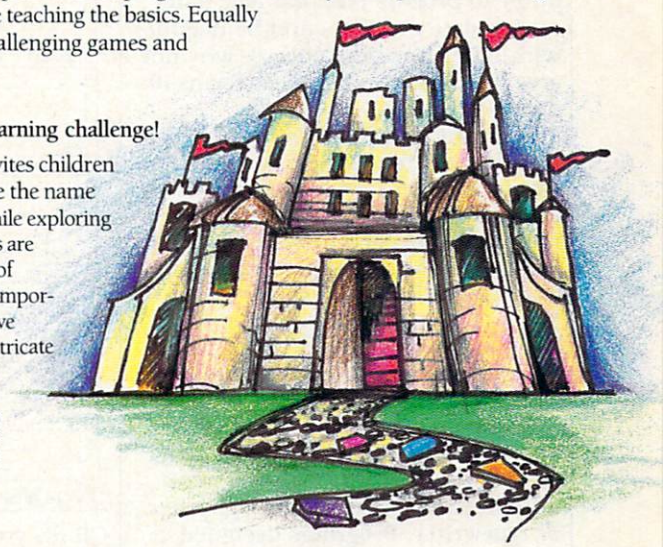
What if your teenager's favorite career doesn't show up on the list? He or she can match the characteristics of that career to the personal assessment and see just where the two did not mesh. Perhaps your child needs to re-evaluate his or her personal interests and skills—or perhaps to think a bit more about whether that career is really a good choice. In either case, the software helps you progress toward identifying careers that build on your child's strengths and provides the kinds of activities and work patterns that he or she will find satisfying.

As your child explores the careers on the initial list and discusses them with other people, the list will likely shrink to 12 or 15 careers that seem to have special promise. The software then guides your child in exploring those careers more deeply. Descriptions are provided not only for occupations on the list, but also for related ones. The software also gives suggestions for ways to find additional information about the most promising careers. When your child finally narrows the search to a handful of exceptionally promising careers, the software helps reduce the choices even further. Your college-bound child will be left with three to five excellent career options to explore over the ensuing weeks and months.

With the right software, then, some of the difficulty in identifying good, affordable colleges and satisfying careers can be reduced or eliminated. But the best software is only supportive: There's still a lot of introspection inherent in making such important life decisions. FC

Turn Your Child's Summer into a Valuable Learning Experience!

Many of you already know our critically acclaimed educational software programs including *Reader Rabbit, Rocky's Boots* and the recently released *Writer Rabbit* and *Math Rabbit.* Teachers and parents have championed these programs because they build problem-solving and creative thinking skills while teaching the basics. Equally important, children love the challenging games and animated graphics.

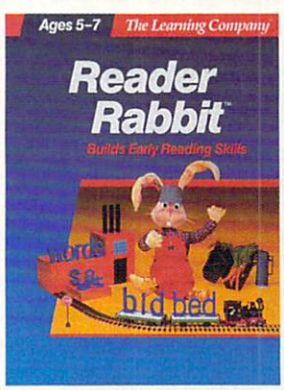


***Think Quick!* An exciting new learning challenge!**

Now, The Learning Company invites children to explore a new program where the name of the game is to *Think Quick!* While exploring the many rooms of a castle, players are challenged to overcome a variety of obstacles. The program develops important thinking skills as children solve mysteries and race through six intricate game levels.

Think Quick!	(Ages 7-12)
Apple II Family	$39.95
IBM (available this Fall)	$39.95

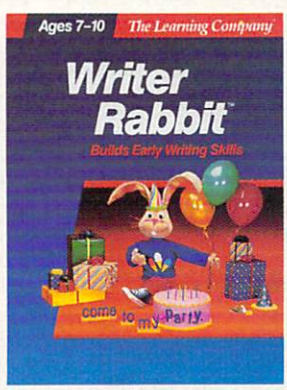
...And don't miss our Three Rabbits. They develop thinking skills and make learning "The Three R's" fun! Now available for IBM and Compatibles!



Reader Rabbit (Ages 5-7)
Winner of the Critics' Choice Award.
—Family Computing

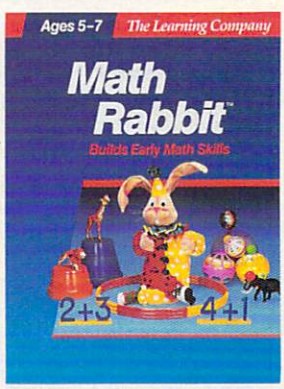
Apple II Family	$39.95
IBM & Compatibles	$39.95

New *"talking"* version of Reader Rabbit for the Apple IIGS ($49.95) will be available this Summer.



Writer Rabbit (Ages 7-10)
"Writer Rabbit is a perfect example of high-quality educational software."
—Apple Education Newsletter

Apple II Family	$39.95
IBM & Compatibles	$39.95



Math Rabbit (Ages 5-7)
"Math Rabbit is the first program that truly captivated my 5-year-old son's interest!"
—Allen Richardson

Apple II Family	$39.95
IBM & Compatibles	$39.95

Go to your Authorized Dealer today and see what's new from The Learning Company. Or call us for more information: (800) 852-2255; In CA: (800) 852-2256.

The Learning Company®

CIRCLE READER SERVICE 54

HOME OFFICE

MAKING BUSINESS FORMS
Three Good and Inexpensive MS-DOS Programs For Producing Letterhead, Invoices, and Other Business Forms

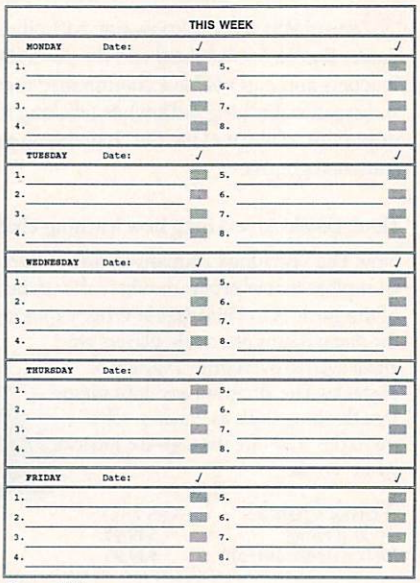
BY HENRY E. BEECHHOLD

Now that you've taught your computer to process text, manage data, manipulate numbers and be helpful with other business chores, why not give it a lesson in business-forms design?

Even the smallest businesses need a variety of standard forms—such as invoices, order forms, letterheads, and calendars. But any one form may not be needed in bulk, and the setup cost for a professional print job is high. You can use your computer to help produce custom-tailored forms when needed and in the number you need, at little more than the cost of the printer paper.

There's nothing new about conventional business forms; you can even order them through the mail and fill them in with your computer or typewriter. Programs designed specifically for generating customized forms are the hot, new items. Macintosh owners can choose from a wide range of page-layout or desktop-publishing software, typified by Aldus's *PageMaker* and Letraset's *Ready,Set,Go!3*. Both these and drawing software (such as Apple's *MacDraw*) can be used for forms design, even though they are general-purpose programs that are just as effective for designing books or newsletters.

Owners of IBM PCs and compatibles, however, have access to a wide range of programs specifically designed for forms generation. These programs fall into two types: graphic layout (GL) and symbolic layout (SL). The former require that you actually draw the form on the screen. You end up with a more-or-less literal representation of the form you can then print out. The latter (SL) gets where it's going under the control of various commands entered in an ASCII file you create with a word processor.



FormWorx

Either way, computer-generated forms can be filled with data on-screen, and then printed; or printed blank, and filled in by typewriter, by hand, or with a computer. And often, you can merge data from other programs (such as Lotus *1-2-3*) onto the forms before printing them.

Regardless of the method of design (I find the SL programs faster and easier to use) printing will take some time for two reasons: the software has to prepare (preprocess) the graphic data for the printer, and the printer itself has to cope with a complex set of commands. Forms printing on a dot-matrix printer generally means using the enhanced mode, which prints at about a third the draft-mode rate.

Laser printers are likewise slowed. Popular laser printer ads that claim an eight-page-per-minute throughput hold true only for straight text printed in the "native" font. Adding graphics (as well as special fonts) slows the process considerably.

And regardless of the sophistication of the software, forms printed on an impact dot-matrix printer will look like computer printouts. For near-printshop quality, you must use a laser printer.

SOFTWARE TO GENERATE BUSINESS FORMS

Each of the three programs reviewed here runs on IBM PC/XTs and true compatibles, and each costs under $100. All three can be used with the HP LaserJet printer, but only *LaserWare* requires it. Each offers a great deal of capability in producing customized business forms, and none is difficult to learn.

EZ-Forms Executive, Version 1.1
$89; 384K IBM PC & compatibles; if used with HP LaserJet, font cartridge HP92286Y required.
EZX Corporation
403 NASA Road One East
Webster, TX 77598
(713) 488-0210 (30-day free phone support to registered users)

EZ-Forms Executive includes a comprehensive inventory of predesigned forms (over 100), and each is reproduced in the manual. To print a form, all you need to do is load the program, select the print command from a menu, and print. In all likelihood, you'll find what you need in the *EZ-Forms* library.

In the event you don't find what you're looking for, the program is equipped to help you either create a new form from scratch or customize an existing form. Forms may be printed blank, filled out from the keyboard, or merged with data from an ASCII textfile.

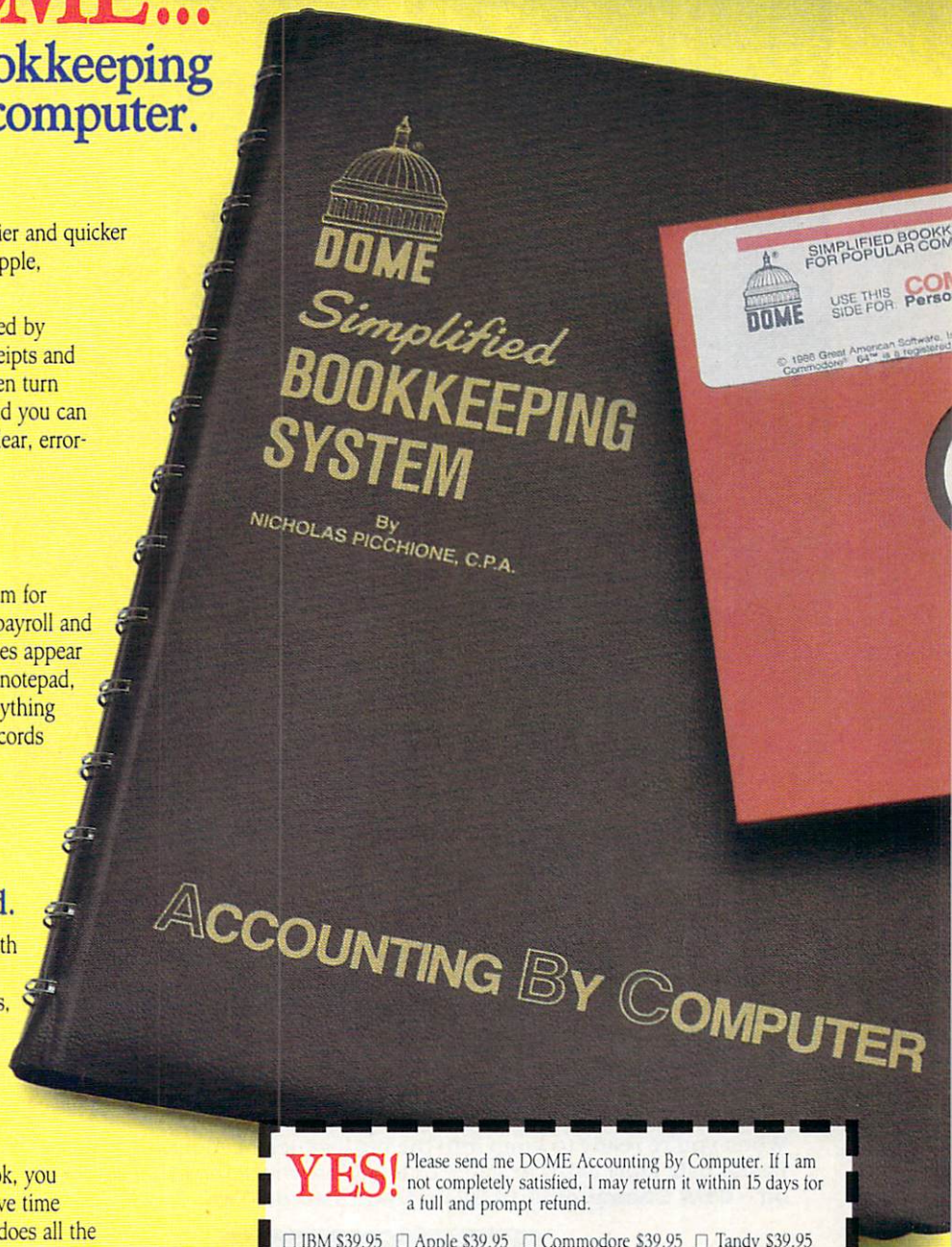
Form design is of the graphic layout (GL) type. The program, which doesn't support a mouse, can draw lines and rectangles (including borders), working somewhat like an Etch-a-Sketch. To draw a line, you first mark the starting point by pressing a function key, then mark the end point with the same key. The second keystroke also draws the line.

If you're filling in the form with

HENRY E. BEECHHOLD, *who writes the IBM column in* Machine Specifics, *is the author of* The Brady Guide to Microcomputer Troubleshooting & Maintenance *(Simon & Schuster).*

At last! DOME...

America's favorite bookkeeping system runs on your computer.



Now the popular DOME bookkeeping system is easier and quicker to use than ever, through the power of your IBM, Apple, Commodore or Tandy computer.

It works just like the familiar DOME record book used by millions of people for over forty years. Just enter receipts and expenses on each "page" on the screen. You can even turn the pages back to look at prior weeks or months. And you can erase! No more smudges, no more cross-outs. Just clear, error-free entries for all your transactions.

The entire DOME book on a single diskette!

In a simple format DOME includes a complete system for business and tax recordkeeping: income, expenses, payroll and financial reports. Plus, exclusive "pop-up" accessories appear on your screen with a single keystroke: a calculator, notepad, list of accounts and even a perpetual calendar...everything you need to maintain a set of books and business records for a full year.

And not only does DOME keep your records but it will help you analyze them with powerful reporting capabilities.

Reports you always wished you had.

Look up or list every expense for the past year, month or day. You can do it by payee or account. Analyze income by product or service. If you have employees, DOME will help when 941 and W-2 forms are due. And print weekly or monthly financial statements showing profit or loss.

Sets up in less than 10 minutes!

Because DOME is based on the familiar DOME book, you already know how to use it! Save time setting up, save time learning and save time each week—because DOME does all the addition for you with complete accuracy. All you do is enter your income and expenses, and let DOME do the rest!

Try it yourself for 15 days without obligation!

System Req: IBM PC, XT, AT or compatibles, 256k; Apple IIe, IIc; Commodore 64, 128; Tandy 1000, 1200, 3000, 256k. Printer optional.

$39.95

Complete and mail the coupon or

CALL TOLL FREE
1-800-528-5015

and charge it to your credit card!

YES! Please send me DOME Accounting By Computer. If I am not completely satisfied, I may return it within 15 days for a full and prompt refund.

☐ IBM $39.95 ☐ Apple $39.95 ☐ Commodore $39.95 ☐ Tandy $39.95

☐ Payment enclosed (plus $1.50 shipping) Charge my ☐ Visa ☐ MC (plus $1.50 shipping)

Card # Expires

Signature ( ) Phone

Name Title

Company

Address

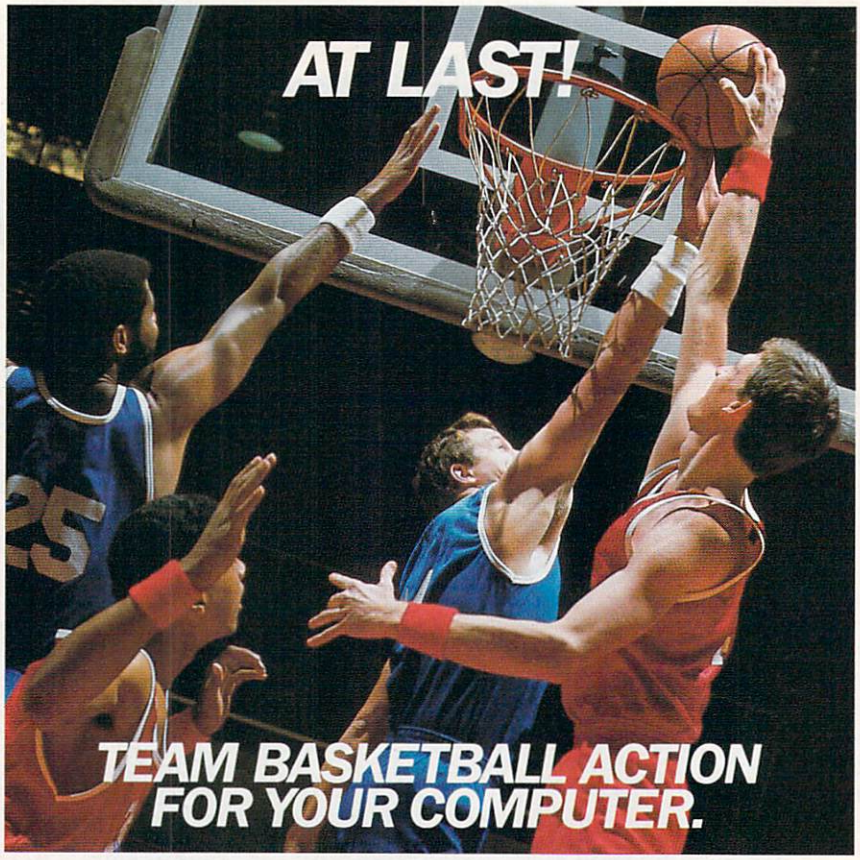
City/State/Zip PFCXX67

Great American Software, Inc.

9 Columbia Dr. • PO Box 910, Amherst, NH 03031 • (603) 889-5400

IBM, Apple, Commodore, and Tandy are registered trademarks of International Business Machines, Inc., Apple Computer, Inc., Commodore Business Machines, Inc., and Tandy Radio Shack Computers, respectively.

DOME® Publishing, Warwick, RI



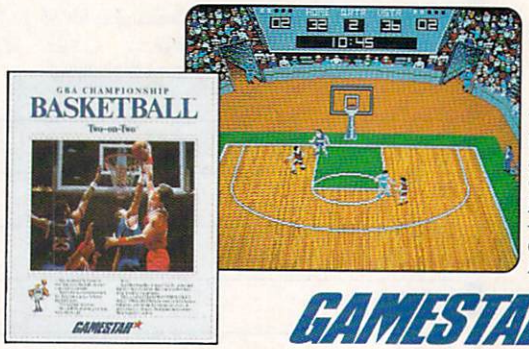
Two-On-Two Basketball Action

One-on-one is OK for a little practice, but real basketball is a **team** sport. To be really good at it, you need **all** the skills – passing, dribbling, shooting, stealing and rebounding. That's what it takes to win a championship. That's what **GBA Championship Basketball™: Two-on-Two™** delivers.

From the roar of the crowd to the swish of the net, from slam dunks to three-point shots, it's all here – fast and competitive.

Not only is there **team** action, but you can even compete in a 4-division, 23-team league – all the way to the playoffs and the GBA Championship game!

When you're ready to jump into the big leagues of computer basketball, start with the game that begins where the others leave off – **GBA Championship Basketball: Two-on-Two.**



Commodore Amiga screen shown.

"...the best arcade basketball game I've seen. If you liked *One on One*, you'll *love* this..." – Randy Chase, *Guide to Computer Living*

GAMESTAR

To order, visit your local retailer or call 1-800-227-6900. Commodore 64, 128 and Amiga are trademarks of Commodore Electronics, Limited. Apple is a trademark of Apple Computer, Inc. Atari ST is a trademark of Atari Corporation. IBM PC and PCjr are trademarks of International Business Machines Corporation. Tandy is a trademark of Tandy Corporation.

For Commodore 64, 128 and Amiga, Apple IIe, IIc, and IIGS, Atari ST, IBM PC, PCjr, Tandy 1000 and 100% compatibles.

data on the screen, a feature called "spreadsheet style math" can be used to make calculations.

Of the four draw-on-the-screen programs I tested, this one was the easiest to use and did its work considerably faster than the others. The *EZ-Forms* library is a big bonus.

FormWorx
$95; IBM PC & compatibles (320K recommended)
If used with HP LaserJet, font cartridge HP92286Y required.
FormWorx Corporation
1365 Massachusetts Avenue
Arlington, MA 02174
(617) 641-0400

Formworx includes a number of predesigned forms for time management (calendars and planners), sales management (commission record, lead log, etc.), and routine business operations (an invoice, a purchase order, and the like). Blank grids (for charts), organization charts and diagrams, and even an athletic play-off tree are available.

For original designs, *Formworx* allows you to make rectilinear designs (no circles, etc.), which you construct with the graphics elements provided in the standard IBM graphics set. *Formworx* does not support a mouse, relying instead on the function keys, much like *EZ-Forms* does.

To accomplish a task such as sizing a box, you must define its range by moving the cursor. The range is marked, and you can proceed with saving or printing the box. The Smart Cursor feature aids the drawing process by automatically moving into the correct position following the placement of, say, a right-angle corner. In general, you manipulate images and text on screen in typical word-processing fashion.

A set of pull-down menus allows access to all of the graphics and text-manipulating features of the program, and a macro facility makes it easy to automate a number of activities. Several predefined macros are included (for example, ALT-3 draws a thick box), and you can define your own, each containing up to 1,000 keystrokes.

Because there is no full-screen preview, you have to scroll screens to get a picture of what any but the smallest forms will look like.

Forms can be filled in from the

keyboard, or merged automatically from disk. You can show parts of a form on the screen but prevent them from being printed out (Hide/Unhide features).

FormWorx is a cost-efficient program comparable in many respects to *EZ-Forms*. Its manual is far superior, but the resulting forms will be about the same.

LaserWare
$99.95; IBM PC & compatibles; 45K DOS 2.0 or higher
HP LaserJet series; printer required.
SWFTE International, Ltd.
P.O. Box 219
Rockland, DE 19732-0219
(302) 658-1123

SWFTE calls *LaserWare* "The Resident Publisher." In fact, the product provides a full stock of formatting commands, sufficient to produce not only forms, but entire documents. To use *LaserWare*, you load it, then load your word processor—so both are in memory at once. You enter the desired text along with the appropriate formatting commands, and send your file off to the printer using the word processor's own print command.

LaserWare provides for lines, boxes, grey levels, hatched shadings; every type of text formatting (justification, centering, and the rest); and font selection on the HP LaserJet printer. You can merge text and graph files, and capture and include graphics images from any program. The program will even make tables according to your specifications—with data placed where you want it.

Commands are set in brackets ([]) and can appear anywhere in the text. For example, [.LC] placed in front of a text string will cause the string to be centered. Fonts can be mixed within a line simply by marking each desired word or phrase with a font number, thus: [3]. (An on-line table tells what numbers to use for the font set you are working with.) Mixed fonts in a given line will be properly spaced and justified.

The detailed manual should answer all of your questions. A little time spent with the manual's tutorials will put you into the picture with very little pain and strain. Flexibility, ease of use, and low cost make *LaserWare* an excellent choice for both forms and document development.

Only NRI teaches you to service all computers as you build your own fully IBM-compatible microcomputer

NEW! Train with the newest Sanyo 880 Series Computer—it's fully IBM-compatible and runs almost twice as fast as the IBM PC!

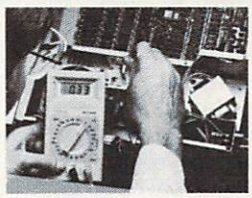
With computers firmly established in offices—and more and more new applications being developed for every facet of business—the demand for trained computer service technicians surges forward. The Department of Labor estimates that computer service jobs will actually *double* in the next ten years—a faster growth rate than for any other occupation.

Your NRI total systems training includes all of this: NRI Discovery Lab™ to design and modify circuits • Four-function digital multimeter with walk-you-through instruction on audio tape • Digital logic probe for visual examination of computer circuits • Sanyo 880 Series Computer with "intelligent" keyboard and 360K double-density, double-sided disk drive • High resolution monochrome monitor • 8K ROM, 256K RAM • Bundled software including GW BASIC, MS DOS, WordStar, CalcStar • Reference manuals, schematics, and bite-sized lessons.

Total systems training

No computer stands alone . . . it's part of a total system. And if you want to learn to service and repair computers, you have to understand computer *systems*. Only NRI includes a powerful computer system as part of your training, centered around the new, fully IBM-compatible Sanyo 880 Series computer.

As part of your training, you'll build this highly rated 16-bit IBM-compatible computer system. You'll assemble Sanyo's "intelligent" keyboard, install the power supply and disk drive, and interface the high-resolution monitor. The 880 Computer has two operating speeds: standard IBM speed of 4.77 MHz and a remarkable turbo speed of 8 MHz. It's confidence-building, real-world experience that includes training in programming, circuit design and peripheral maintenance.



NRI is the only technical school that trains you on a total computer system. You'll install and check keyboard, power supply, disk drive, and monitor, following step-by-step directions.

No experience necessary—NRI builds it in

Even if you've never had any previous training in electronics, you can succeed with NRI training. You'll start with the basics, then rapidly build on them to master such concepts as digital logic, microprocessor design, and computer memory.

Send for 100-page free catalog

Send the coupon today for NRI's 100-page, full-color catalog, with all the facts about at-home computer training. If the coupon is missing, write to: NRI, 3939 Wisconsin Ave., NW, Washington, D.C. 20016.

SEND COUPON TODAY FOR FREE NRI CATALOG!

NRI SCHOOLS
McGraw-Hill Continuing Education Center
3939 Wisconsin Avenue, NW, Washington, DC 20016
We'll give you tomorrow.

For Career courses approved under GI Bill ☐ check for details.

☑ CHECK ONE FREE CATALOG ONLY

☐ Computer Electronics
☐ TV/Audio/Video Servicing
☐ Satellite Electronics
☐ Robotics & Industrial Control
☐ Data Communications
☐ Industrial Electronics
☐ Communications Electronics
☐ Electronic Design Technology
☐ Telephone Servicing
☐ Digital Electronics Servicing
☐ Basic Electronics
☐ Electricians
☐ Appliance Servicing
☐ Small Engine Repair
☐ Air Conditioning, Heating, & Refrigeration
☐ Locksmithing & Electronic Security
☐ Building Construction
☐ Automotive Servicing
☐ Photography
☐ Bookkeeping & Accounting

Name (Please print) Age

Street

City/State/Zip

Accredited by the National Home Study Council

155-067

PERSONAL FINANCE

YOUR MONEY AND YOUR MAC

A Look at *MacMoney*, a Personal-Finance Program For the Macintosh

BY MATTHEW STERN

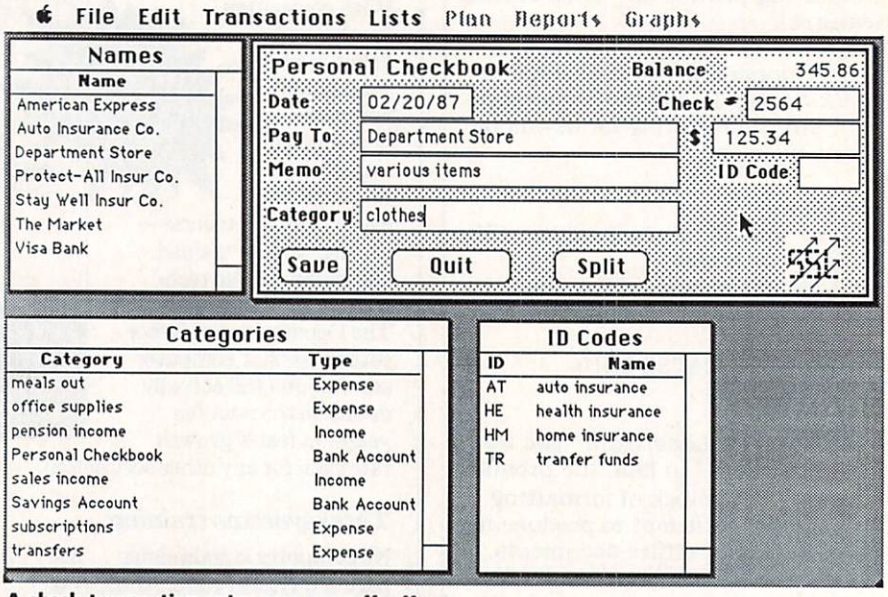
Many consumers are charmed by the Macintosh's knockout desktop-publishing capabilities. Business people use the Mac to create illustrated ads, fliers, and newsletters; students use it to write eye-catching term papers; a friend of mine even uses it to produce a monthly magazine for her friends and relatives.

The same Mac that is touted for its finesse at creating illustrated manuscripts is an equally effective personal-finance tool. Its ability to combine text and graphics, ample memory, fast processor, and simple point-and-click controls—all so perfect for desktop publishing—are also pluses for balancing budgets. With its fonts and near-typeset-quality printing on the Apple LaserWriter printer, the Macintosh can make your financial records look like a million bucks, even if you have only a hundred.

A POINT-AND-CLICK ACCOUNTANT

One program that showcases the Macintosh's power, ease of use, and graphics capabilities is *MacMoney*, an integrated accounting and financial-planning program published by Survivor Software, Ltd. ($75; 11222 La Cienega Blvd., Suite 450, Inglewood, CA 90304; [213] 410-9527). If you want a complete personal-finance system, the program can help you create budgets; manage your checking, savings, and credit-card accounts; monitor your assets and liabilities; and print checks, reports, and graphs.

Although *MacMoney* performs sophisticated record keeping, you don't have to be a bookkeeper to use it. With the help of my Macintosh's pull-down menus, I learned the program in half an hour with only a few glances at the manual. If you can't remember how to perform a function, *MacMoney* provides on-line help screens as you need them.



A check-transaction entry screen on *MacMoney*.

Transactions are entered on on-screen forms that look like checks. Unlike handwritten checks, *MacMoney*'s on-screen check forms don't require that you plug in all the information for each one. You can put the names and addresses of companies you frequently write checks to in a Names List. To write a check to a particular company, select Names List from the Lists menu and choose the name to pop into the payee blank on your check.

While bank-statement reconciliation can be a hair-pulling task, *MacMoney* simplifies matters. Just click on the transactions that cleared at the bank and then click on Reconcile. A dialogue box will tell you if your checkbook balances out and—if not—by how much it is (or you are) off.

MacMoney also will let you print a variety of reports, including income and expense reports, personal balance sheets, and transaction reports. If one of these report forms doesn't suit your needs, you can customize it to show specific transactions. You can print your reports on the Apple ImageWriter dot-matrix printer, or if you have access to a LaserWriter, *MacMoney* can print them in near-typeset quality. If you would like a visual representation of your financial data, *MacMoney* generates pie, bar, and trend-line charts.

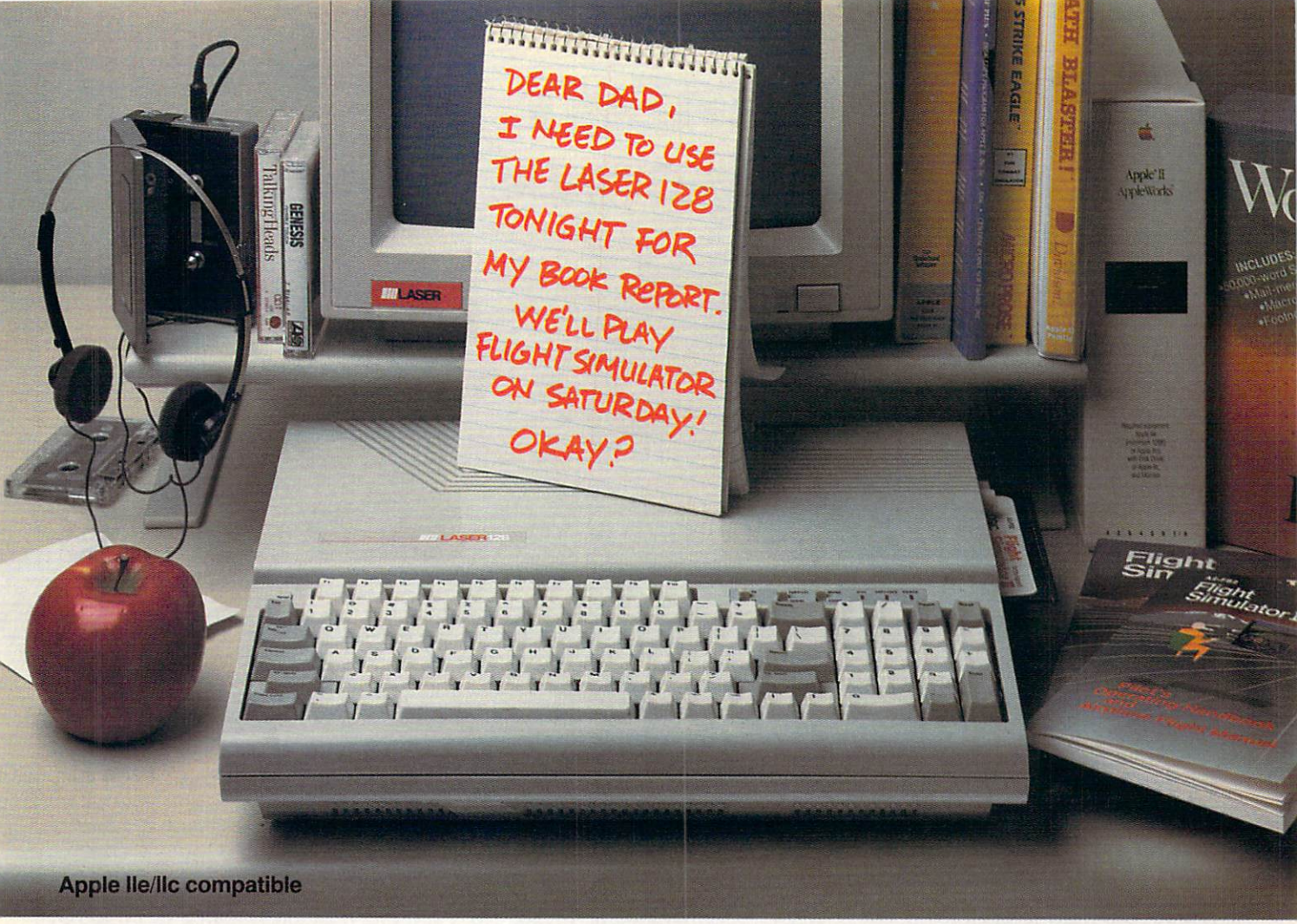
If you deal with many money transactions, you might be interested in knowing that 3,000 transactions can fit on a single-sided Macintosh disk or 6,000 on a double-sided or hard disk. *MacMoney* runs on a regular 512K Macintosh and takes advantage of the additional features of a Macintosh Plus.

You may need to transfer your *MacMoney* data to other programs. For instance, if you operate a home business, you can send your budget to a spreadsheet program like *Microsoft Excel* (Microsoft Corp.) for furthur analysis or export it to *PageMaker* (Aldus Corp.) or *Ready,Set,Go!3* (distributed by LetraSet) to show clients how well you did last year. You can transport your yearly financial information into a tax-preparation program like *MacInTax* (SoftView), which lets you enter information onto forms that look exactly like the Internal Revenue Service forms.

MacMoney offers a new approach to money management. It's a sophisticated personal-finance program that's easy to use, partly because of the Mac's unique features that afford you more ways to use and analyze your financial information. FC

MATTHEW STERN *is a contributing editor of* FAMILY COMPUTING. *You can address questions to him in the* FAMILY COMPUTING *Forum on CompuServe (*GO FAMFORUM*). His identification number is* 73547,2420.

EDITOR'S NOTE: *This is the first in a series of articles that review personal-finance software. Next month,* FAMILY COMPUTING *will take a look at another program of this kind.*



Apple IIe/IIc compatible

Now your kids can afford to do their homework

More and more students are learning with computers. However most parents haven't been able to work a computer into their budget. The Laser 128 Apple-compatible computer will let you do all those things that you and your family want to or have to do – homework, write reports, even play games for a fraction of the cost of an Apple. With a Laser you can work out your budget on a computer, instead of breaking it with one. The Laser lets you take advantage of the largest software library available, so your child can learn more at home with the same programs they learn on in school. And, you can do your work at home on the Laser, too.

The Laser 128 with all its features: built-in disk drive; 128K RAM (expandable to 1 megabyte); serial, parallel, modem and mouse interfaces; 80 column text mode; numeric keypad; and an expansion slot; makes for a pretty educated buy. When you do your homework on which computer to buy, you'll find the Laser 128 at the head of the class with value. For more information on the Laser 128 and the name of your nearest dealer, contact Video Technology Computers, Inc., 400 Anthony Trail, Northbrook, IL 60062, or call (312) 272-6760.

LASER 128

Apple, Apple IIe and Apple IIc are registered trademarks of Apple Computer, Inc.

Manufactured by
VIDEO TECHNOLOGY COMPUTERS, INC.

MAKING COMPUTERS AFFORDABLE

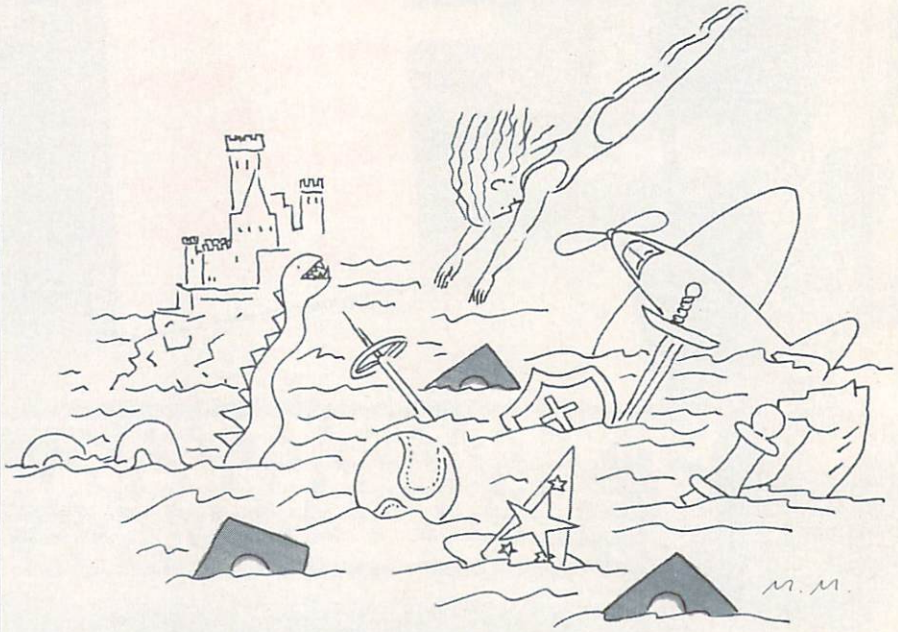
CIRCLE READER SERVICE 56

ENTERTAINMENT

16 GREAT GAMES FOR BEGINNERS

BY JAMES DELSON

If you're a computer owner who has never played a computer game, isn't it about time to take the plunge? Game-playing is a natural computer application, and it's many people's favorite use for this electronic marvel. Here's a column to help you find gaming software that will suit your personal style, tastes, and abilities.



SWIMMING INTO A SEA OF GAMES

There is a wide array of games available for players with little or no experience. And most can be played with a minimum of instructions.

Our first two games, *Lode Runner* and *Super Boulder Dash*, can be instant fun even for rank amateurs, yet continue to give pleasure to experienced players, too. Both games resemble the popular, fast-moving, coin-operated arcade games that have been around for the past decade. Players use joysticks or the keyboard to move characters around the screen, having them perform tasks to gain points while staying out of the clutches of the computer-controlled bad guys. Not only is *Lode Runner* exciting (you grab sacks of gold from intricate mazes while avoiding guards), it also offers a built-in "construction set" that allows players to modify the program or expand it by building their own mazes. *Super Boulder Dash* (which is packaged along with the original *Boulder Dash* game) has graphics that are particularly outstanding. It's also a maze game, but here you avoid large rocks, not evil guards.

Pinball Construction Set is another program most folks learn quickly. You can play straightforward, rapidly paced pinball games, or—as the name implies—get involved with more creative elements by designing pinball tables of your own. Controlling a joystick, mouse, or the keyboard, you choose from various bumpers, flippers, traps, and other pinball pieces stored in a "parts box." This was the first program to take on the guise of an electronic erector set.

JAMES DELSON *is a contributing editor for* FAMILY COMPUTING.

All-time favorites among gamers are the Olympic sports trilogy of *Summer Games*, *Summer Games II*, and *Winter Games*. Each presents a variety of simulated events that test your skills in track and field, gymnastics, swimming and diving, riding, shooting, skiing, and a score of other seasonal activities. Though easy to learn, these games require practice to achieve proficiency in each event. They're ideal for play alone or in groups.

For those of you seeking more challenges, yet still unwilling to digest long instruction booklets, we propose *The Cave of Time*, an introductory text/graphic adventure. The computer acts as a storyteller, spinning a tale in which you actively participate. At key points in the adventure, you are offered a number of on-screen options. Based on your answers, the computer adjusts the remainder of the story accordingly.

DIVING DEEPER FOR FUN

Programs in this next group are a bit more difficult to learn (you'll have to read at least part of the manual), yet are still ideal for newcomers—especially if you're already interested in their subjects.

Sports fans who long for a realistic game that they can play against both human and computer opponents will be thrilled with *Julius Erving and Larry Bird Go One-On-One*, more often just called *One-On-One*. This classic basketball game gives you incredible graphics and an especially realistic feel for the sport, because these two championship players helped design it.

Sports fans who want more than joystick action should pick up a copy of *APBA Major League Players Baseball*. This exciting strategy game allows you to manage Major League teams through a game, a series, or even a whole season. A construction-set element lets you draft a dream team of your choice from existing players, and then pit them against other teams, either real or imaginary.

In *Lords of Conquest*, a challenging political/military simulation, one or two players vie for control of a country, a continent, or even the whole world. Combining the combat of Risk with the financial maneuverings of Monopoly, this highly rated program can be learned in 15 minutes, but will take many hours to master.

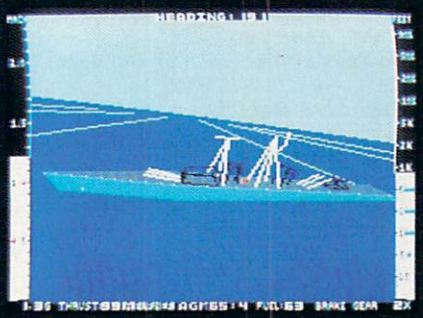
Moving up the ladder of complexity, we find *Ultima III*, the most simple scenario to begin with in a popular adventure series. Players create imaginary characters—such as dwarf fighters, hobbit magicians, and human priests—then guide them through fantastic adventures in a mythical land filled with gruesome monsters, castles, treasures, and other items of wonder. *Ultima* (and other role-playing games) are

ILLUSTRATION BY MONA MARK

F L I G H T !

From the sophisticated realism, detail, and intellectual stimulation of Flight Simulator...

...to the brute-force fun, thrills and excitement of Jet...



...with new adventures in Scenery Disks...

...SubLOGIC. The State of the Art in Flight.

See Your Dealer. For additional product ordering information or the name of the dealer nearest you, call (800) 637- 4983.

subLOGIC Corporation
713 Edgebrook Drive
Champaign IL 61820
(217) 359-8482 Telex: 206995

ORDER LINE: (800) 637-4983
(except in Illinois, Alaska and Hawaii)
Open 7 AM to 9 PM Central Time

CIRCLE READER SERVICE 50

SOFTWARE BEST SELLERS MAKE HEADLINES!

Stickybear

1. Stickybear® ABC **"Best Software, 1986, 1987"** *A+ Magazine*

2. Stickybear® Numbers **"Best Software of the Year"** *Learning Magazine*

3. Stickybear® Reading **"Stimulates creative thinking..."** *Electronic Learning*

4. Stickybear® Math **"The Best of the Best"** *Electronic Learning*

5. Stickybear® Printer **"Especially appealing for the youngest computer users"** *Booklist*

Math Word Problems

6. Math Word Problems **"Destined to become an industry classic"** *Electronic Learning*

Car Builder

7. Car Builder **"Best Education Software of 1986"** *Family Computer*

Users Want Headline-Making Software!

Headline-making software programs are educationally-sound, motivating, and fun to use! And those are the programs *Weekly Reader Software's* got!

So, when you're ready to try educational software, buy *Weekly Reader Software*. Our headlines speak for themselves!

To find out more about all our quality, award-winning software programs, use the coupon below.

Weekly Reader Family Software A/MS94-F
4343 Equity Drive, P.O. Box 16754
Columbus, OH 43216

☐ **YES!** I would like to learn more about the full line of *Weekly Reader Family Software* programs. **Please send me a FREE COLOR BROCHURE.**

Name

Store Name

Address Phone

City State Zip

Educational software that sells!

CIRCLE READER SERVICE 18

ENTERTAINMENT

particularly popular among teenagers and college students, who are willing to put in 200 hours-plus to finish these heroic adventures.

Simulators attract everyone from novice to pro, but generally, the better the simulator, the more difficult it is to play. However, that's not true for *Acrojet*, a stunt-flying program that gives you control of an aerobatic plane. One to four players can participate in this program that demands precise timing, as well as excellent judgment of height and speed, to negotiate a series of low-level aerobatic race courses.

COMING UP FOR AIR

But some people don't mind starting off game-playing with programs that are more difficult. They'll find the thrill of flying in two of the best but most difficult-to-master programs on the market: *Flight Simulator* (for the IBM PC and compatibles and the Macintosh) and *Flight Simulator II* (for most other computers). Both teach you how to fly small planes, and then put you in the cockpit of a World War I biplane to test your skills under combat conditions against German aces. The instructions for these simulators are exhaustive, although one can try to learn the ropes by simply taking a plane up and hoping for the best.

Some of the most sophisticated computer games are military simulations—programs that recreate battles, campaigns, and wars, and then let you attempt to change their historical outcomes. *The Ancient Art of War*, which puts you in command of armies from ancient times through the 19th century, is a fine introduction to this complex genre. You pit your skills against such opponents as Alexander the Great, Napoleon Bonaparte, and Genghis Khan. Move your pieces on a scrolling map, and then zoom into detailed combat where animated warriors do battle in high-resolution graphics. There's also a construction-set option that helps you create war scenarios.

Any list of games for beginners can't be complete without a text adventure from Infocom. Our selection is *The Hitchhiker's Guide to the Galaxy*, a funny, devilishly clever adaptation of the popular science-fiction book. This novel-like program consists of puzzles that must be solved in order to proceed with the tale. It's a real challenge for newcomers and requires a great deal of patience and cleverness to finish.

WHERE TO NEXT?

There are literally hundreds of titles available in the computer gaming field, of which we have selected a scant 16 for this column. To help in your continuing quest for superior entertainment software, you'll find reviews of games each month in FAMILY COMPUTING *(see page 52 for this issue's game reviews)*. These feature the newest games available, all tested by gaming experts to make your recreation more pleasurable. FC

GAME SOFTWARE INFORMATION

Acrojet (MicroProse Software). C 64/128. $25.
The Ancient Art of War (Broderbund Software). IBM PC/PC*jr*, Macintosh. $45.
APBA Major League Players Baseball (Random House Software). 128K Apple IIe/IIc, IBM PC/PC*jr*. $60.
The Cave of Time (Bantam Software). Apple, C 64/128. $25-$35.
Flight Simulator (Microsoft). IBM PC/PC*jr*, Macintosh. $50.
Flight Simulator II (SubLogic). Amiga, Apple, Atari, Atari ST, C 64/128. $50.
The Hitchhiker's Guide to the Galaxy (Infocom). Amiga, Apple, Atari, Atari ST, C 64/128, IBM PC/PC*jr*, Macintosh. $35-$40.
Lode Runner (Broderbund Software). Apple, Atari, C 64/128, IBM PC/PC*jr*, Macintosh. $35-$40.
Lords of Conquest (Electronic Arts). Apple, Atari, C 64/128. $33-$40.
One-On-One (Electronic Arts). Amiga, Apple, Atari, C 64/128, IBM PC/PC*jr*, Macintosh. $15-$40.
Pinball Construction Set (Electronic Arts). Apple, Atari, C 64/128, IBM PC/PC*jr*, Macintosh. $15-$40.
Summer Games (Epyx). Apple, Atari, C 64/128. $40.
Summer Games II (Epyx). Apple, C 64/128, IBM PC/PC*jr*. $40.
Super Boulder Dash (Electronic Arts). Apple, Atari, C 64/128, IBM PC/PC*jr*. $15.
Ultima III (Origin Systems). Amiga, 64K Apple, Atari, Atari ST, C 64/128, IBM PC/PC*jr*, Macintosh. $50-$60.
Winter Games (Epyx). Amiga, Apple, Atari ST, C 64/128, IBM PC/PC*jr*, Macintosh. $40.

PUBLISHER CONTACTS

Bantam Software, (212) 765-6500.
Broderbund Software, (415) 479-1185.
Electronic Arts, (415) 571-7171.
Epyx, (415) 366-0606.
Infocom, (617) 492-6000.
MicroProse Software, (301) 771-1151.
Microsoft, (206) 882-8080.
Origin Systems, (603) 644-3360.
Random House Software, (800) 638-6460.
SubLogic, (217) 359-8482.

DATA EAST BRINGS ARCADE REALISM HOME!

ENTER THE DATA EAST SWEEPSTAKES

OVER 100 PRIZES – Win free Data East Computer Games, a real Data East Arcade Game, and a trip for two to the National Arcade Expo!

No purchase necessary. See participating dealers for details. Void where prohibited. *

KARATE CHAMP® – Put on your black belt and challenge your friends or the computer through nine picturesque settings in this leading Martial Arts game to become the Karate Champ. For Commodore 64/128™ and Apple II® series.

COMMANDO®* – As the crack shot Commando, battle overwhelming odds to defeat advancing rebel forces! Armed with only a machine gun and hand grenades, you must reach the fortress. For Commodore 64/128™, Apple II® series, and IBM.

IKARI WARRIORS™* – Behind enemy lines, guerilla warfare are your tactics as you and your partner battle through the jungles, rivers, ruins, and opposing entrenchments in this interactive 2-player arcade hit. For Commodore 64/128™.

BREAKTHRU™ – Your mission is to retrieve the secret fighter plane stolen by hostile renegades. Use your sophisticated assault vehicle to Break Thru each of the five enemy strongholds. For Commodore 64/128™.

EXPRESS RAIDER™ – Bandits have seized the Gold City Express. Rescue the passengers, save the train, and recapture the loot! For Commodore 64/128™.

TAG TEAM WRESTLING™ – Teamwork and stamina are the keys, as you and your partner battle your way through the Title Matches on your quest for the belt. For Commodore 64/128™, Apple II® series, and IBM.

KUNG-FU MASTER®* – Battle the evil forces through the five dangerous floors in the wizard's castle to rescue the captive fair maiden. For Commodore 64/128™ and Apple II® series.

DATA EAST

DATA EAST USA, INC. 470 NEEDLES DRIVE, SAN JOSE, CALIFORNIA 95112. (408) 286-7074.

© 1986 DATA EAST USA, INC. *COMMANDO, IKARI WARRIORS, AND KUNG-FU MASTER MFD. UNDER LICENSE FROM CAPCOM USA, SNK CORP., AND IREM CORP. RESPECTIVELY. COMMODORE, APPLE, AND IBM ARE REGISTERED TRADEMARKS OF COMMODORE ELECTRONICS LTD., APPLE COMPUTERS, INC., AND IBM, RESPECTIVELY.

*DATA EAST SWEEPSTAKES – OHIO RESIDENTS MAY ONLY ENTER BY MAILING A 3" X 5" POSTCARD TO: DATA EAST, P.O. BOX 519, SAYREVILLE, NEW JERSEY 08872.

CIRCLE READER SERVICE 14

TELECOMPUTING

GENIE VERSUS COMPUSERVE
How the New Low-Cost Network Compares with the Established Leader

BY CHARLES H. GAJEWAY

Information networks for personal computers are a wonderful invention. With a modem, a telephone line, and an account with one of the major services, you have access to valuable resources that significantly increase the usefulness of your computer.

From your living room or home office, you can find electronic encyclopedias, news, financial and travel information, software, technical knowledge, and high-powered adventure games. You can converse with other people around the country and send and receive electronic mail.

The only drawback is that this power can be insidiously expensive. Many people are wary about on-line time after getting one or two heart-stopping bills.

COMPARING COSTS

Since it started service in October 1985, General Electric Information Services (a division of General Electric Corporation) has been promoting its GEnie personal computer network ([800] 638-9636) as a low-cost alternative to more widely known and used information networks. With an $18 sign-up fee, a $5-per-hour connect charge for either 300- or 1200-baud usage, and no monthly minimum, GEnie's price is definitely attractive. In cities where it's available, 2400-baud access is $15 per hour. GEnie's non-prime rates are available weekdays from 6 p.m. to 8 a.m. and for 24 hours a day on weekends and holidays.

By contrast, evening and weekend rates on CompuServe ([800] 457-8650)—the only other network with the same type of offerings—run at $6 per hour for 300-baud access and $12.50 per hour for 1200-baud and 2400-baud usage. The initial sign-up fee is $39.95.

Of course, money isn't everything. The strength of a network is in its services and the number and variety of its users. In this regard, GEnie has one flaw—it's new.

Being new means it has fewer users (45,000) to talk to and glean information from. GEnie doesn't yet have the same amount of material in its data bases as a more established network such as CompuServe (with 350,000 subscribers).

And being new also means that there aren't as many access phone numbers available; if you don't live near one of the 650 cities where GEnie offers local access, you'll have to make a long-distance call to one of GEnie's access numbers. And many of these numbers carry a $2 surcharge. Thus, in locations where a local CompuServe phone number is available, GEnie could cost more despite its lower connect rate.

NEWS AND REFERENCE

GEnie's News, References, & Financial section is a bit thin. The news is limited to a smattering of computer-related topics; there is no wire service or daily headline summary, as on CompuServe.

Reference consists solely of *Grolier's Academic American Encyclopedia*, an excellent, easy-to-use information resource that is updated four times each year. For the cost of connect time and a fee to Grolier ($7.50 per month, $29.95 for six months, or $49.95 per year), you gain unlimited access to the electronic encyclopedia, which is detailed enough to support all but the most advanced high-school projects. *Grolier's Encyclopedia*, however, is also available on CompuServe.

Financial options include a stock-quotation service, which carries a surcharge of $10 per hour. There's also a loan calculator to help figure amortization costs and the VESTOR investment-analysis service ($10 per hour surcharge) to help manage your investment portfolio.

CompuServe offers a wider variety of news- and financial-information services. There's access to several wire services and the National Weather Service. Financial information includes a stock ticker with real-time quotes, commodity prices, and historical prices for stocks, bonds and options from 1973 to the present.

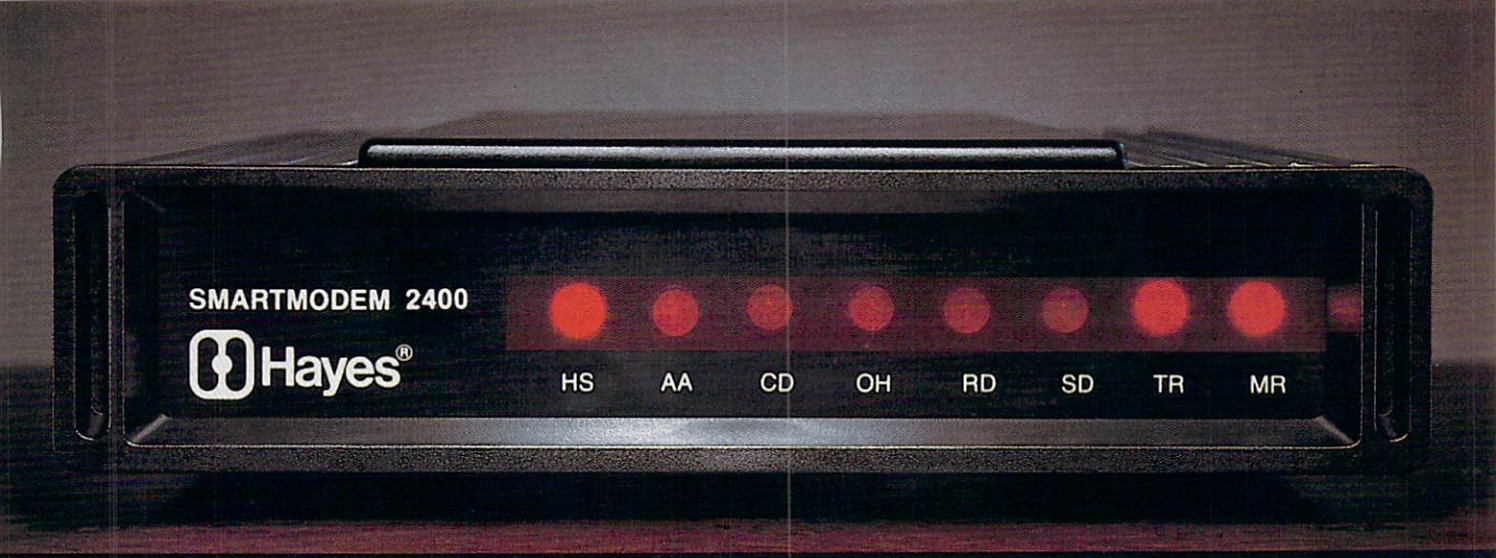
In addition, CompuServe provides access to the Standard & Poor's, Disclosure Inc., and ValueLine data bases for corporate financial reports, plus banking and brokerage services.

CB, CONFERENCES, AND ROUNDTABLES

GEnie's LiveWire is a CB Simulator (a CompuServe-coined phrase)

Contributing editor CHARLES H. GAJEWAY, *author of the Apple column in* Machine Specifics, *can be reached on CompuServe* (ID: 73357,3577) *or on GEnie* (ID: CGAJEWAY).

ILLUSTRATION BY BEATA SZPURA



CHOOSE THE NAME THAT COMMUNICATES QUALITY.

We'd like to pass along some data on why you should insist on a Hayes Smartmodem 1200™ or Smartmodem 2400.™

First and foremost, no one knows more about building reliable, high performance modems than Hayes. And no wonder. Hayes pioneered the personal computer modem a decade ago, and today is actually the de facto standard in computer communications with the widespread adoption of the Hayes Standard "AT" Command Set.

Second, Hayes has a long-standing and unwavering commitment to customer support, not just to service its products, but to serve as a resource for information, assistance, and technical advice for everyone from the home user to the corporate communications manager. Moreover, Hayes provides more than a warranty on the material and workmanship of its products. Hayes warrants they will perform as promised, as well.

Should you need further data to help you make up your mind, we offer this reassuring statistic: Year after year, more personal computer owners buy far more Hayes modems than any other kind.

And that may be because a Hayes modem is the only modem with the ability to transmit and receive data, and at the same time convey a feeling of peace of mind.

Hayes®

SAY YES TO THE FUTURE

© 1987 Hayes Microcomputer Products Inc.

Hayes Microcomputer Products, Inc., P.O. Box 105203, Atlanta, GA 30348, 404-441-1617.

CIRCLE READER SERVICE 20

Want to Master High School Math?

THEN YOU NEED THE MOST EFFECTIVE HIGH SCHOOL MATH SOFTWARE EVER DESIGNED

Intelligent Tutor

HIGH SCHOOL MATH SERIES
IBM PC / PC jr / COMMODORE 64
APPLE II SERIES

Each package in the Intelligent Tutor series is complete and self-contained. Each is designed to help students review and master basic principles and concepts, develop their problem-solving skills, and build their confidence.

ALGEBRA 1
Designed for a one-year course in elementary algebra. Comprehensive coverage of all major topic areas, including review of arithmetic; fundamental operations; solving algebraic equations; polynomials; factoring; radicals; exponents; quadratic equations; graphs; coordinate geometry; functions; word problems; etc.

GEOMETRY
Designed for a one-year course in plane geometry. Comprehensive coverage of all major topic areas, including angles; parallel lines; theorems; proofs; constructions; congruent and similar figures; figures involving triangles, circles, and parallelograms; word problems; etc.

ALGEBRA 2
Designed for a one-year course in intermediate algebra. Comprehensive coverage of all major topic areas, including review of elementary algebra; solving systems of two and three equations; functions; polynomials; complex numbers; exponents; logarithms; conics; determinants; word problems; etc.

TRIGONOMETRY & ADVANCED TOPICS
Designed for a one-year course in trigonometry and other topics taught in higher level high school math courses. Comprehensive coverage of all major topic areas, including introductory and advanced trigonometry; binomial theorem; progressions; graphs; word problems; vectors; complex numbers; probability and statistics; etc.

SAT MATH
Comprehensive coverage of the problem types and skills emphasized on the Math Section of the SAT. Permits students to take simulated SAT tests, see forecasts of their SAT scores, and see evaluations of their strengths and weaknesses. Helps students to develop their skills, and to improve their SAT scores.

And, Just Released...
INTRODUCTORY CALCULUS
Our newest title will help high school and college students master the principles and concepts of introductory calculus.

ALGEBRA 1	$49.95
GEOMETRY	$49.95
ALGEBRA 2	$49.95
TRIGONOMETRY & ADVANCED TOPICS	$49.95
SAT MATH	$69.95
ALL FIVE TITLES ABOVE	$199.95
INTRODUCTORY CALCULUS	$49.95

ADD $3.50 SHIPPING & HANDLING
INDIANA RESIDENTS ADD 5% SALES TAX

INTELLIGENT SOFTWARE, INC.
9609 CYPRESS AVE. / MUNSTER, IN 46321
(219) 923-6166

TELECOMPUTING

that allows you to communicate directly with a group of on-line GEnie users. Any number of people tuned in to the same CB channel can type messages to which the others can respond. GEnie's LiveWire has 40 channels to CompuServe's 72 (36 on each of two bands), but they rarely get as crowded and chaotic as CompuServe's CB. I like this because it's easier to hold a conversation; on the other hand, many people like the feel of a crowded CB channel.

CB is fun, but it's addictive, and a real connect-time burner. I'm consistently shocked at how much time I've spent when I log off.

GEnie's Real-Time Conference (RTC) is an electronic meeting room. Users can reserve one of 40 on-line "rooms" and a specific date and time for their discussion. Conferences can be public or private, and stenographic services are available to record the proceedings.

The various RoundTables are the home of special-interest groups (SIGs) on GEnie. There are RoundTables for all the major personal computers, offering members access to software libraries, bulletin boards with messages, and conferences. Though computer RoundTables dominate the selection (the Macintosh and IBM RoundTables are the most popular services on GEnie), there are a handful of groups devoted to hobbies such as scuba diving, genealogy, and photography.

CompuServe has many more forums, and they are bigger and busier than GEnie's. CompuServe's larger forums are so busy, the turnaround on the message boards is very fast; if you don't check in twice a week, you may miss a response to your posted question or notice. And there are more non-computer groups than on GEnie, such as the Space Forum and Work From Home Forum.

GEnie's message boards are structured like reference files (named Categories) that collect and hold input on certain Topics. The messages don't scroll down the screen, as they do on CompuServe. On the other hand, GEnie's system is more cumbersome to use than CompuServe's, and much less interactive—for instance, you don't reply to a person, you reply to a topic.

TRAVEL AND GAMES

GEnie's travel section is one of its strongest parts. You have access to American Airlines' EAASY SABRE reservations system to plan and reserve airline flights, hotels, and car rentals. Plus, you can access TravelData, a ranked guide to hotels, restaurants, and car rental agencies in more than 150 cities worldwide.

CompuServe offers the less impressive Travelshopper airline-reservation system, which doesn't allow you to make hotel- and car-rental reservations. And its Official Airline Guide Electronic Edition carries a heavy surcharge. But, as elsewhere, CompuServe's overall travel offerings far outweigh GEnie's lineup.

Multiplayer games on CompuServe have been popular for some time, and the same is true on GEnie. Its *Stellar Warrior* is the fourth most popular activity (after the two RoundTables and LiveWire). Mainframe games can offer a degree of complexity and speed in adventure/strategy games that is difficult to obtain on a personal computer.

While GEnie has a dozen or so games, CompuServe has over 30 in six classifications. Be warned, though—games are even worse clock-burners than CB. According to a couple of advanced strategy players I know, a good round of an advanced game can absorb nearly 100 hours over the course of several months!

CHOICES

If I had to make a choice between the two services (I subscribe to both), I'd have a hard time. I agree with the comments I've heard again and again from GEnie users—that GEnie is a "friendlier," more "personal" network. That's partly because it's new and its users have a sense of community. In addition, the low-cost 1200-baud transmission rate helps lower the cost of downloading text and/or programs.

On the downside, GEnie does not offer the broad spectrum of services—beyond its computer RoundTables—that CompuServe does. If you want to find computer-related information, download software at 1200-baud, or burn time on LiveWire or playing games, GEnie can be a bargain. But if you need to use CompuServe's far-ranging services, then GEnie's cost benefit is moot.

Of course, there's no reason why you can't subscribe to both services. Neither has a minimum-usage fee, so after the initial sign-up fee you pay nothing unless you go on-line. I'm very happy with both of my accounts. FC

$20 Super Discount

A disk each month delivered to you...

packed with programs for your Apple, IBM PC, C64/128 or Macintosh.

DISCOVER UPTIME. You deserve the best from your computer. Have the best and save the most with UPTIME.

We make it easy and inexpensive — a disk each month. You deserve value. At UPTIME we believe in value. That's why each month 30,000 people like you enjoy a disk packed full of programs and information.

Make life easier & get more from your computer. Organize your life and be more productive with **home management** and **finance** programs. Have fun learning with our **educational** programs and fun relaxing with **games** and **adventures.** You will find **business, graphics, utilities & more!**

NOW FOR ALL MICRO COMPUTERS

At least eight great programs on every disk. What's the opposite of "downtime"? It's UPTIME, of course. Just imagine ... a disk each and every month, delivered right to your door and packed with programs for your micro.

Subscribe now, with our introductory offer! Satisfaction guaranteed, or your money back. Make the very next disk yours! Fill in the coupon and return it to us, or simply call. We'll start your UPTIME subscription immediately.

Call
1-800-437-0033
Today!

QUALITY PROGRAMS LESS THAN $1.00 each

A Typical Disk Includes:

Label Magic ■ Living Art ■ File Doctor ■ Calendar ■ One Foundation ■ Financial Package ■ Decision Maker ■ Tips and Hints ■ News and Views ■ Product Reviews

CIRCLE READER SERVICE 57

I'LL BYTE!!! I'm a computer enthusiast who wants more. Please start my subscription to **UPTIME** immediately.

$20 SUPER DISCOUNT SAVE $109.90

12 Disk Issues ☐ ~~$89~~ $69

6 Disk Issues ☐ $59

3 Disk Issues ☐ $36

1 Trial Issue $14.95 ☐

(Add $2 per issue in foreign countries, except Canada and APO)

Name _____

Address _____

City _____ State _____ Zip _____

Type of Computer _____

☐ Payment enclosed. (Make checks payable to **UPTIME.**)

Bill my: ☐ Visa ☐ MC Exp. Date _____

Signature _____

Account No. _____

Send to:
UPTIME · PO Box 299
Newport, RI 02840
(401) 849-4925
Code FC6

MACHINE SPECIFICS

NEWS, OPINIONS, QUOTES, & RUMORS ABOUT YOUR FAVORITE COMPUTER

APPLE

BY CHARLES H. GAJEWAY

Last month, I described the features and functions of several II-series expansion peripherals from Applied Engineering. This month, I'd like to discuss how they performed in my tests and what they can add to your system's capabilities. Let's begin with the memory-expansion boards, the RamFactor and the RamWorks III. Both products will accommodate up to 1 MB of expansion memory on the main board, but they are quite different in design and application.

RamWorks III ($179–$219; 64K or 256K) plugs into the memory/video slot in the IIe, and handles 80-column video output as well as memory expansion. (RamWorks III works exclusively on the IIe.) My test unit was equipped with the optional RGB monitor connection, which produced extremely sharp, steady images. Memory can be expanded further with piggyback boards holding 512K or 2 MB. The board is equipped with RAMdisk software, but it's the *AppleWorks* expansion software that really makes RamWorks III stand out.

After a brief installation procedure, I booted *AppleWorks* and found that my desktop had expanded from 55K to 727K! As a point of comparison, Lotus *1-2-3* provides about 440K of user memory on a 640K IBM PC.

Working with a reasonable number of *AppleWorks* files becomes intuitive and effortless. According to Applied Engineering, a variety of popular ProDOS-based software, including the *VIP Professional* spreadsheet, also will take advantage of RamWorks's features.

If RamWorks III is the IIe powerhouse, RamFactor ($239–$389; 256K, 512K, or 1 MB) is the versatility champ. This card works in slots 1–7, and is one of very few memory-expansion cards that offers a power backup module to create a truly useful RAMdisk. The board will work in the II Plus, IIe, IIGS, and compatibles like the Franklin and the Laser 128. I used it to create a system that divided the extra memory between *AppleWorks* desktop expansion and RAMdisk program storage that could load *AppleWorks*, *WordPerfect*, and other large applications at eye-blink speed. RamFactor's reliable battery backup means you can leave these programs in memory even after you turn the computer off, so that they're always ready to use.

A RamFactor RAMdisk can be formatted to contain both DOS 3.3 and ProDOS files—though most of my DOS 3.3 programs wouldn't load into a RAMdisk because of copy protection. This is unfortunate because RamFactor is a natural choice for II Plus owners, who are likely to have quite a few DOS 3.3 programs.

CHARLES H. GAJEWAY *can be reached on CompuServe* (ID: 73357,3577) *or on GEnie* (ID: CGAJEWAY).

ATARI

BY JOHN J. ANDERSON

Veteran Atarian David Small has generated a lot of interest in his new product, Magic Sac—an Apple Macintosh emulator for the Atari ST. The product consists of a cartridge and software on disk, and retails for $149 (Data Pacific, 609 E. Speer Blvd., Denver, CO 80223; [303] 733-8158). Many of you have written to ask whether Magic Sac is a good investment.

The answer is not simple. Yes, Magic Sac does work and offers some real advantages over the Macintosh itself. But it also requires some work on your part.

Macintosh Emulator. First, Magic Sac ships without the Macintosh 64K ROM sets required for it to work. You will have to acquire the genuine Macintosh ROMs—which can only be bought from an Apple dealer as part of an upgrade kit—and install them yourself. The Magic Sac documentation explicitly states that the cartridge will work only with original Macintosh ROMs.

Next, be aware that Magic Sac prevents Atari ST drives from reading Macintosh disks. Atari STs and Macintoshes sport entirely different disk formats. So, to transport Macintosh software to the Atari, you need access to a Macintosh and a null modem cable, which is included in the package. (The null modem cable is a special serial cable that allows you to connect two machines via serial ports.) Using a Macintosh communications program (David Small recommends *FreeTerm*), you may then transmit the *System*, *Finder*, and other unprotected programs from Macintosh disks to ST disks.

MacPaint ST. Finally—though Small claims that most Macintosh software that follows Apple's programming guidelines will run on the ST—the only way to really know what runs and what will not run is to try it. Copy-protected software, of course, will not run. In many cases, only earlier versions of certain programs run bug-free; for example *MacWrite* version 2.2 runs well, but not newer revisions. *MacPaint* version 1.5 runs too, as do many other packages.

But several titles currently won't run under Mac emulation on the ST. For instance, Small points out that any Macintosh software that tries to find a particular memory location on the ST will error out—because on the ST that location is in ROM. In addition, Magic Sac does not support any Macintosh sound functions. Small recommends that the sound setting on the control panel always be set to zero.

While making your ST compatible with the Macintosh remains attractive, in practice it's a bit dicey and bound to stay that way for some time. But there are some advantages to the system. For example, the ST's standard parallel interface (the Macintosh has a non-standard serial interface) allows hookup to several printers. And although system overhead will not allow a 520ST to emulate a 512K Mac, a 1040ST can be configured as an 896K Mac. (Perhaps we could call it a SuperFat Macintosh.) When you consider that the 1040ST retails for less than $1,000 and Magic Sac for less than

$200 (including separate ROM purchase), that represents a bargain worth serious thought.

Multi-Purpose Modem. Thanks to Steve Godun, of Piscataway, New Jersey, for pointing out that the Atari SX212 modem has connections for the Atari XE/XL series, the Atari ST, and any computer with an RS-232C serial port. In our March issue ("*Modems in the Mainstream*") we listed the modem as working only on the ST. However, to use the modem, you will have to buy communications software for the ST or the XE.

JOHN ANDERSON *can be reached on CompuServe* (ID: 76703,654).

COMMODORE

BY SHAY ADDAMS

Laser printing—once available only to Macintosh and IBM-compatible owners—is now within the reach of anyone with a C 64. And you don't even need to spend thousands of dollars for a printer that generates the near-typeset quality text and smooth graphics delivered by a laser printer. Subscribers to the QuantumLink on-line network can upload *geoWrite* files (with graphics and text) to Berkeley Softworks ([415] 644-0883). The company then prints your files on an Apple LaserWriter printer and mails you the hard copy. The charge is $3 for the first page and $1 for each additional page.

With the overlay option you can design multiple-column pages. I've already seen one newsletter (*Kids Computer News*) that is prepared with this service.

If you do enough laser printing to justify buying your own machine, printer drivers for *GEOS* let you run the Apple LaserWriter and Hewlett Packard LaserJet—but not Okidata's LASERLINE 6, as I incorrectly stated in the March column. For the Oki, you need an interface; then most 64/128 software can print laser copy. Parallel and serial interfaces are available from Omnitronix ([206] 624-4985; $60–$80). The Laserline 6 is also PC compatible, so it works with Commodore's PC 10-1 and 2.

Rock 'N Roll. Electronic Arts ([415] 571-7171) publishes a slick magazine called *Deluxe News*, full of features and tips on *DeluxePaint*, *Deluxe Music Construction Set*, *DeluxeVideo* and other Amiga programs. The magazine is distributed to registered owners of the *Deluxe* programs. Electronic Arts also has released supplemental music software for the Amiga: *It's Only Rock 'N Roll* ($29.95) provides 18 digitized instruments plus 40 prerecorded rock songs to use with *Deluxe Music Construction Set*, *Instant Music*, and *DeluxeVideo*.

Activision also has something new for Amiga musicians. *The Music Studio* ([415] 960-0410; $59.95) enables you to create 15-channel music and print sheet music. It has 15 instruments and a synthesizer that you can use to invent new instruments. Files are IFF compatible, so they can be played by other IFF software. The 64/128 version is $34.95.

Plus 4 Update. Irene Mogg, of Sonora, California, tried the toll-free number of the Tri Micro Plus Exchange Users Group ([800] 826-4859) for information on the C 16 and Plus 4 but couldn't reach it from that state. The group's address is P.O. Box 11300, Santa Ana, California 92711; the California number is (714) 549-1902.

SHAY ADDAMS *is editor and publisher of* Questbusters, *an adventure-game newsletter. He can be reached on CompuServe* (ID: 72267,601) *or on QuantumLink* (ID: JBCHALMER).

IBM

BY HENRY BEECHHOLD

IBM, faced with surprisingly stiff competition in the laptop market from Toshiba, Zenith, and NEC, has made some changes in its PC Convertible portable. The new computer—with 256K RAM, two 3.5-inch disk drives, and an 80 x 25 screen that flips up into viewing position—sells for $1,995.

The biggest change is in the liquid crystal display (LCD) screen. New super-twist technology gives the screen greater contrast and, thus, better readability as evidenced in the Toshiba 1100 Plus and others. A new LCD screen can be added to old Convertibles for $250.

Second, the internal modem—that IBM offers as an option—is now Hayes compatible and sells for $450. Previously, the IBM internal modem used its own commands and required special software. Finally, the old Convertible could not be expanded beyond 512K; the enhanced computer can be expanded to 640K.

Software Carousel. *Switcher* for the

ZEPHYR's

EXCLUSIVE SOFTWARE

Good Software! Great Prices!

For YOUR

APPLE II+/IIe/IIc IBM PC/XT/JR
Pick the Ones YOU Want:

☐ **FINANCER™**—10 most needed financial calculations in easy to use package. Menu selectable for: amortization schedule, present values, future values, simple & compound interest, installment loan, days between dates, & more. Output to screen or printer. **"FINANCER is best"-G.W.,Montana** **$19.95**

☐ **MUSICMAN™**—Compose music on screen, placing notes, rests, sharps, flats on musical staff. Vary key, pitch, tempo & legato to perfect your music. Save your compositions to disk to replay or revise later. Comes with musical selections. 80 column display. **$29.95**

☐ **ASTROSTELL™**—Learn the constellation using your computer, all 88 included. Four levels star brightness simulate sky on screen. Gives star names, positions of galaxies, nebula, etc., plus lore & observing tips.80 column screen. **"A Perfect Delight"-Prof. M.F.,Minnesota.** **$29.95**

☐ **STATCALC™**—Key statistical functions for student or experienced user. Includes correlation & regression, normal, T, Poisson, binomial, Chi-square, distributions, data handling for sorts, mean, standard deviation, range, median. Save data to disk. Manual explains statistics and program use with examples. **$39.95**

☐ **HOROSCOPICS™**—For your birthdate and time the exact sky conditions are calculated and horoscope chart printed out, with zodiac, sun, moon & all planets. Includes astrological reading, sun & moon sign, ascendant, conjunctions & oppositions. **$24.95**

☐ **BIO-DATA™**—Calculates Biorhythms for any time period you specify and displays on screen or to printer. For your birthdate gives celestial longitude of sun and your astrological sign. Determines Julian Day #, days since birth & day of week for birth. **$19.95**

☐ **VOCABULATOR™**—Improve your vocabulary at selectable skill level, from high school to sequipedalian. Use multiple choice or quick review mode. Add words you want included. **"Recommended: Excellent Program"-Electronic Learning Mag** **$29.95**

☐ **SUPERCAT™**—Professional level cataloging for up to 5,000 books per directory with hard disk or 1000 per floppy (400 for Apple). Multiple subjects & authors, call #, title, publisher, etc., plus fields to customize. Print 3x5 index cards & reports in various formats. Sort and retrieve data by any field. Fast and easy to use. **$49.95**

☐ **CATMAN™**—Catalog your books, records, tapes with ease. Store author, title, and subject for up to 3000 item per floppy(1500 for Apple). Use search options to to get listings on screen or printer. Your choice if full power of Supercat not needed. **$19.95**

☐ **HEADLINER™**—Print banners and signs on any 80 or 132 column printer in letters up to 13" high (smaller sizes, too). Any length headline. Great for parties, kids, offices, stores. Get your message across! **On PC MAG Holiday '85 Wish List.** **$19.95**

FREE CATALOG OF OTHER SOFTWARE
CALL OR WRITE

ORDER TODAY!

By phone or mail. Check, M.O., credit card (# & Expir. Date). Add $2 shipping ($4 overseas). PA add 6%. Give COMPUTER TYPE. **JOIN OUR THOUSANDS OF SATISFIED CUSTOMERS** in 50 states and more than 70 countries, including homes, businesses, schools, & governments. Fast shipment!

ZEPHYR SERVICES

1900 Murray Ave. Dept. E
Pittsburgh, PA 15217
☎ **412-422-6600**
ORDER BY PHONE 9-9, MON-SAT
OUR 6th YEAR OF BUSINESS

CIRCLE READER SERVICE 58

Free
Famous hi-tech catalog

A very special guide to what the exciting world of computer and electronics kit-building can do for you.

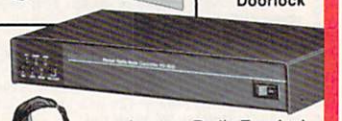
The informative Heathkit Catalog shows you more than 450 exciting electronic products that will challenge, instruct, and entertain you. You'll find countless kits that you can build and enjoy, from computers and robots to color tv's and a variety of home products. And each is backed by our years of experience and our promise, "We won't let you fail."

IBM-PC Compatible Expandable Computers

HERO® 2000 Educational Robot and Courseware

Precision Test Instruments

Electronic Keyless Doorlock



Amateur Radio Terminal Node Controller

Send NOW for your FREE Heathkit Catalog.

Send to: Heath Company, Dept 363-542
Benton Harbor, Michigan 49022

Name _____

Address _____

City _____ State _____ Zip _____

A subsidiary of Zenith Electronics Corporation CL-784R1

Heathkit®
Heath Company

CIRCLE READER SERVICE 21

MACHINE SPECIFICS

Macintosh lets you load two or more programs into memory and quickly switch between them. *Software Carousel* ($59.95), a new program for IBM PC and compatibles, lets you do the same. Each program that is loaded into memory is like a slide held in a carousel on a slide projector. It's conceivable that without ever rebooting your computer you could hop among word processor, data base, spreadsheet, and other programs you may want to use.

You can set up specific amounts of memory for each program you want in RAM at once. Each partition is given its own name, which is associated with a function key. Thus, F1 might stand for (and switch you to) *MyWord*; F2, *MyCalc*; and so forth. Formerly conflicting memory-resident programs, like *SideKick* and *SuperKey*, can now live comfortably together.

You can change your setup at any time. Say you've set up your word processor for 128K but you discover that things are getting tight. Just call up the configuration menu and change the value.

If you use your computer intensively, *Software Carousel* may pay for itself in speed and convenience before the week is out. (SoftLogic Solutions, Inc., 530 Chestnut Street, Manchester, NH 03101; [800] 272-9900; [603] 627-9900 in New Hampshire.)

HENRY BEECHHOLD *is the author of* The Brady Guide to Microcomputer Troubleshooting & Maintenance *(Simon & Schuster).*

MS-DOS

BY STEVE MORGENSTERN

Lotus Development Corp. has recently taken measures to protect *1-2-3*'s position as the undisputed sales leader among spreadsheets.

First, Lotus filed a lawsuit against two companies offering inexpensive *1-2-3* clones. Both of the competitors under fire (*VP-Planner* from Paperback Software and *Twin* from Mosaic Software) added significant features to the Lotus program. Besides, where would Lotus be if the makers of *VisiCalc*—the original electronic spreadsheet—had taken legal action based on the enormous debt *1-2-3* owes to their program?

HAL. On a more positive note, Lotus has tried to improve *1-2-3* with the introduction of *HAL* ($150), an add-on program. *HAL* is an absolutely ingenious piece of work. It provides a simpler way to enter *1-2-3* commands and several new commands as well, all of which bring unique ease-of-use features to the market leader. Now that's the way to beat up on the competition.

Whether you're a beginner or a seasoned *1-2-3* veteran, *HAL* is well worth having.

Many *HAL* requests are convenient shortcuts. For example, if you want to set up a spreadsheet with the names of the months across the top, you can just put your cursor in the first cell and instruct *HAL* to "enter jan to dec across." Want figures in column C that are 10 percent higher than the figures in Column B? Tell *HAL* to "project col b by 10 percent." Want to see a fast graph of the information in your spreadsheet? Tell *HAL* "graph this" and quickly you'll see a bar graph.

In addition to automating functions which would otherwise require one-cell-at-a-time trips through *1-2-3*'s layers of menus, *HAL* includes an extremely valuable UNDO command. UNDO lets you reverse your last action, whatever it was. *HAL* has the only decent UNDO function I've ever seen in a spreadsheet program, and it's a potential life-saver.

HAL is not like a text-adventure game that lets you type in your own commands and then executes them. *HAL* requests have their own definite words and structures, and you must use them correctly to advance. The commands are logical, though, and they streamline Lotus *1-2-3* so much it seems like a whole new product.

Educate Me. A reader wrote asking for recommendations for educational software (for 7–10-year-olds) that runs on an IBM compatible *without* a color graphics board or color monitor. There isn't much that runs on a monochrome monitor, but the highly-acclaimed Davidson & Associates ([213] 534-4070) educational software does.

Clone Wars. *InfoWorld*, a weekly trade paper covering the computer industry, recently quoted Forrester Research on IBM's slipping computer sales: Big Blue accounted for 58 percent of U.S. shipments in 1985, but the clones turned the tables in 1986 with a projected 58 percent share.

STEVE MORGENSTERN *can be reached on CompuServe* (ID: 72545,606).

TANDY

BY STEPHEN MILLER

The first of the Tandy-distributed CoCo 3 software, running under OS–9 Level II, has finally started to arrive. Epyx's *Rogue* (Cat No. 26-3297; $29.95) has been put in the CoCo 3 format, as has the Epyx/Lucasfilm *Koronis Rift* (Cat. No. 26-3298; $29.95). Both have been available for other computers.

The color, sound, and animation on *Rift* are nothing short of wonderful—at least on the Tandy CM-8 RGB monitor. However, I found that the game really doesn't move fast enough to classify as an arcade shoot-'em-up, and there are not enough puzzles to solve to be classed as a first-rate adventure. The sound, color, and the cute robots, however, may be enough to keep young kids interested.

Rogue, on the other hand, is short on color, graphics, sound, and animation, but it is much more of a challenge. I found myself playing it at length. Now, if I can just keep the leprechaun from stealing my gold....

Beginners' Tutorials. Digital Learning Systems has come out with tutoring programs for the Tandy 1000s: *The FUNdamentals of the EX* (Cat. No. 25-1167; $29.95) and *The FUNdamentals of the SX* (Cat. No. 25-1166; $29.95). I love the style of the programs. They provide an entertaining and painless—yet informative—introduction to both the EX and SX, and the basics of computer use. I especially liked the drawing program used to demonstrate the FUNCTION keys in the EX version.

EX Expansion. To expand the EX, you must use Tandy PLUS expansion boards. In order to use more than one expansion board, you first must install the Memory Plus Expansion Adapter (Cat. No. 25-1062; $129.95). It increases memory from 256K to 384K, and has slots for two additional boards. The additional boards *must* be PLUS boards; third-party expansion boards will not fit. You can also add PLUS boards to the SX (or any other IBM-compatible computer) if you first install a PLUS Upgrade Adapter Board (Cat. No. 25-1016; $14.95).

A Short CoCo Leash. A couple of CoCo 3 owners were complaining (on a bulletin board I frequent) about the short cable furnished with the CM-8 RGBI monitor. The short leash makes it impossible to place the monitor any distance from the computer. That problem can be solved by ordering a six-foot monitor extension cable from Spectrum Projects ($19.95; P.O. Box 264, Howard Beach, New York).

STEPHEN MILLER, *former computer columnist for UPI, is a freelance writer and computer consultant.*

ORPHANS

BY PATRICK SPERA

Triton Products Company (P.O. Box 8123, San Francisco, CA 94128; [800] 227-6900) has announced a new package that will allow TI-99/4A users to use their computers as keyboards for an IBM compatible. The package ($499) includes a bridge box and a 256K IBM PC XT compatible computer, but no monitor or keyboard. Now, you can either use the TI-99/4A alone, or use it as a keyboard for the IBM compatible.

Inside the expansion box is a Turbo XT. It runs at two speeds and has 256K (expandable to 640K), a parallel port, a color graphics adapter, disk controller card, and disk drive.

The XT is accessed by a BASIC command, CALL XT. Returning to 4A control is done by holding down the FCTN, CTRL, and RETURN keys together. This system seems fine if you want to keep using your TI; but if you just want an IBM compatible, you might be better off buying a separate unit.

The two machines can run independently. You could simultaneously run a data-base program on your IBM and play a game on the TI. A bad point to this is that you will not be able to access the XT disk drives with TI BASIC.

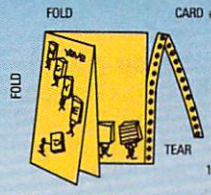
TS 2068 Soundesign. RMG Enterprises (1419½ 7th St., Oregon City, OR 97045; [503] 655-7484), has announced a program that allows you to design and edit musical or sound effects for use on your TS 2068. *Soundesign 2068* ($14.95 plus shipping) is menu-driven, and only three keys are needed to design a sound effect, which can then be used in your BASIC programs.

PATRICK SPERA *can be reached on CompuServe* (ID: 76703,4350), *and is administrator of the Computer Club Forum* (GO CLUB), *a home for orphaned-computer owners.*

NEW COLOR MAIL FOR JUST $11.95*

Spruce Up Your Business, Social, Personal Messages with Colorful Pre-printed Greeting Card Announcements. (Fan Folded-Tractor Fed)

Use With Any Computer-Printer-Any Word Processing Program.



CARD #	CARD TITLE
1	CELEBRATE
2	PARTY TIME
3	AN INVITATION
4	THANK YOU
5	A SHORT NOTE
6	WE'VE MOVED
7	OPEN HOUSE
8	SEASON'S GREETINGS
9	MERRY CHRISTMAS
10	CHRISTMAS DESIGN

*Special Sampler Pre-pack Offer
50 Cards-40 Envelopes Only $11.95
Plus $2.00 Shipping and Handling.
(Special Bulk Rates Available)

To Order: Ask Your Dealer or Call:

Classic Compu Cards
3100 W. Chapel Avenue
Cherry Hill, NJ 08002
(609) 667-5310

ADAM	
Ribbon Cart (Adam)	1/$5.50 - $3/15.00
5¼" Disks (SS, DD) or (DS, DD)	25/$13.25 - 10/$6.40
Data Pack (Adam) - Original Replacement Plain-Labeled Coleco Loran - (Don't Lose Info on Cheap Datapacks) 1/$3.95	**10/$34.95**
Data Packs - Inexpensive / **We'll beat any price**	**CALL**
Daisy Wheel (Adam)-Italic Script Elite	1/$5.50
Adam Covers - Set with Logo	$17.95
Micro Works - Integrated Home/Bus System	$25.95
ENGLISH GRAMMAR BUILDER I - (Tutor) - DP/D	$19.95
HACKERS GUIDE TO ADAM - Volume II with Disk or DP	$17.95
VOCABULARY BUILDER I (Tutor) - DP/D	$19.95
ALGEBRA I (Tutor) DP/D	$19.95
EBU - Replacement for SmartBasic, Plus More - DP/D	$21.95
Sign SHOP - DP - Custom Design & Print Signs etc.	$20.95
PRINTER STAND	$13.99
AMIGA™ - Atari™ ST Series	
DIABLO-Graphic Mind-Challenge Game	$29.95
DISK LIBRARY-File Catalog Search More	$49.95
DEALER INQUIRIES INVITED	
3½" DISK (SS DD)	25/$37.50 - 10/$16.50
3½" DISK (DS DD)	25/$42.25 - 10/$17.95
AMIGA COVERS - Set with Logo & mouse	$21.95
AMIGA COVERS - Disk drive - 1010 ro 1020	$7.39
ATARI COVERS - 520 ST SYSTEM SET	$34.95
All AMIGA™ and Atari™ ST software, write for low prices	
NEW COMPUCARDS - COLOR MAIL	
$11.95/40-50 sampler pack	
Specify Title	
Labels T/F-F/F (Address)	1000/$6.95
3½" DISK LABELS T/F-F/F	**100/$8.95**
S&H - $2.50 US	**M W RUTH CO Dept F67**
S&H - $4.50 CN VISA	**3100 W. Chapel Ave**
US $s only MASTER	**Cherry Hill, NJ 08002**
FREE CATALOG - DISCOUNT PRICES	**(609) 667-2526**

Amiga is a reg trademark of Commodore Corp Atari is a reg trademark of Atari Corp

How much computer will $799 buy?

About this much of an IBM PC XT

About this much of a COMPAQ

About this much of a LEADING EDGE

About this much of an EPSON

With the AMSTRAD PC1512, everything is included.

At last! A powerful IBM-compatible personal computer with the popular "MOUSE" and software, all at an affordable price. No add-ons needed, just plug it in and go!

Here's what you get:

Monochrome monitor, paper white with 16 gray levels – 360kb double sided floppy disk drive – 512k memory – 8086 processor (8mhz) – "mouse" – PC compatible keyboard – Joystick port – Parallel and Serial ports – 3 full sized PC compatible expansion slots – Complete user instructions.

"FREE" Software ($500 retail value)

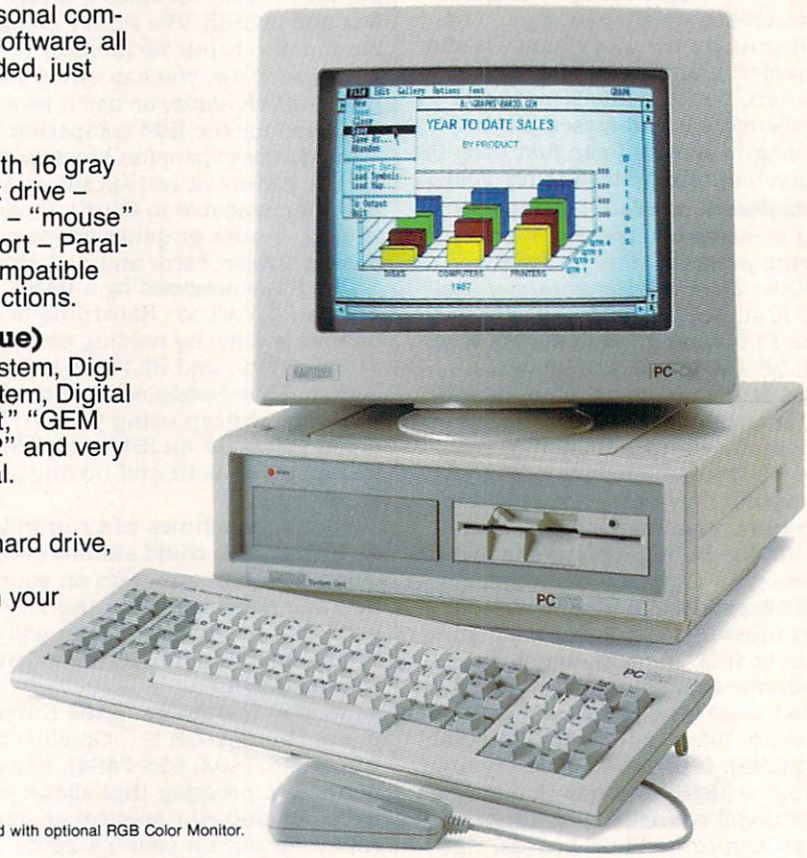
Microsoft MSDOS V3.2 operating system, Digital Research DOS PLUS operating system, Digital Research "GEM Desktop," "GEM Paint," "GEM Doodle," Locomotive Software "Basic 2" and very detailed, clearly presented user manual.

Optional Features

Second Floppy disk drive or 20 MB hard drive, RGB Color Monitor, 16 colors.

It's never been easier to get going on your own personal computer. It's what you've been waiting for.

The AMSTRAD PC1512 is available now at better Computer Dealers Nationwide. If your dealer doesn't have them yet, write or call and we'll tell you where you can buy one.



Unit pictured with optional RGB Color Monitor.

IBM, Compaq, Leading Edge, Epson, Amstrad and Microsoft MS-DOS are registered trademarks of International Business Machines Corp., Compaq Computer Corp., Leading Edge Products, Epson America Inc., Amstrad plc and Microsoft Corp., respectively.

The complete AMSTRAD PC1512.

Sole U.S. Agent, Vidco, Inc.
1915 Harrison Rd.
Longview, Texas 75604
214-297-4898

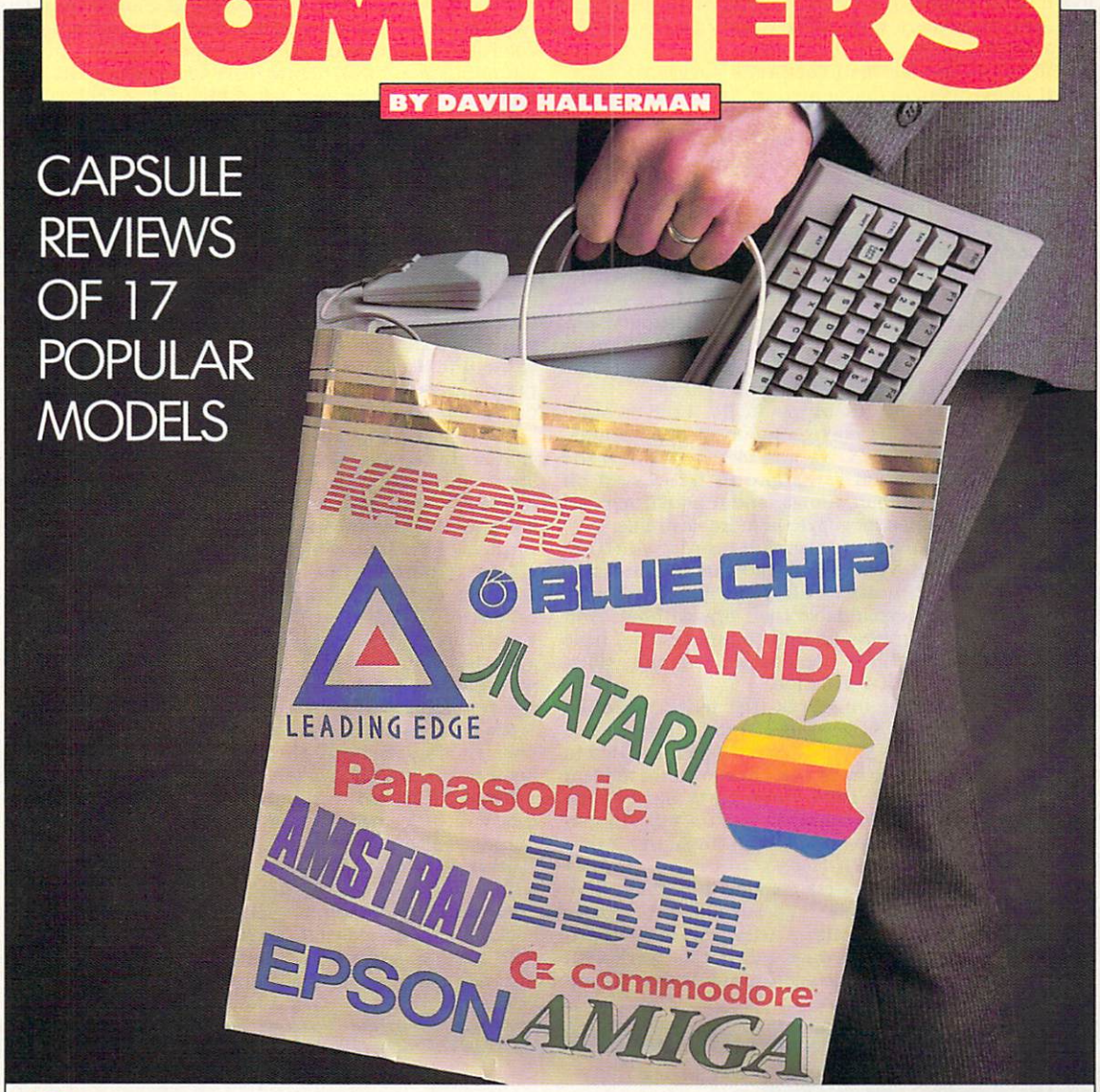
AMSTRAD®

"Family-friendly™...business-smart

BUYER'S GUIDE TO COMPUTERS

BY DAVID HALLERMAN

CAPSULE REVIEWS OF 17 POPULAR MODELS



I'm in the midst of shopping for my second computer, and even though (or maybe because) I work with them all the time, it's a tough decision, same as when I bought my first machine. I want to get one that's right for *me*. At the same time, with more computing power available at less cost than ever before, I almost can't go wrong. Any type of computer will suit me and serve me well.

As I weigh the pros and cons of various models, I realize that any buying decision is preceded by a series of questions and answers. So if you find yourself in the computer marketplace with me, interrogate yourself! What do you want to do? How are your needs likely to change? What can you afford? How do you like to work or play or learn? Do you want a machine from an older line (like an Apple IIe or the Commodore 128) that has software for all interests, particularly educational programs for kids? Or are you entranced by the newer mouse-and-icon based computers—like the Apple IIGS, Macintosh, Amiga, or Atari ST—with their superior graphics and sound? Do you need the business-standard software of an IBM PC or compatible?

You can begin to answer these questions with this Buyer's Guide to Computers. Each system included here is one we can recommend—to the right person. Using the concise specifications, you can make a point-by-point comparison of such vital data as memory, colors, sound, graphics resolution, and bundled software or included hardware. In the remarks that follow the specs, you can discern the machine's strengths and weaknesses.

DAVID HALLERMAN *is a senior editor for* FAMILY COMPUTING.

PHOTOGRAPH BY PAUL D'INNOCENZO

HOW TO READ THE SPECS

Here's an explanation of the specifications for each computer, which is listed in its most commonly sold configuration. As with cars, you can buy computers with different accessories, so use our specs as a general guide.

List price: All prices are the manufacturer's suggested retail. However, most computers are discounted or "bundled" with extra peripherals. It pays to shop.

Warranty: Coverage ranges from 90 days to 15 months. In some cases, you can pay extra for an extended warranty or a service contract.

Memory: Measured in kilobytes (each K equals 1,024 characters) and megabytes (each MB equals 1,000K), with both standard and manufacturer's maximum configurations given. (One double-spaced page equals about 2K.) The more memory, the merrier. A larger memory allows a computer to run programs that are more powerful and easier to use. More memory also allows you to have more programs or data on your desktop at once, and leaves room for memory-resident programs—such as the desk accessory *Sidekick* or an electronic thesaurus.

For the Commodore 128 and the Apple IIe/IIc, 128K is standard memory, and it should be enough for most applications. For the Apple IIGS and the IBM PC/XT and clones, 256K is the lowest acceptable memory; if you can afford it, try to start off with at least 512K. The Macintosh, Amiga, and Atari ST demand at least 512K of RAM, and one megabyte is more desirable.

Slots: Slots accept add-on (or plug-in) circuit boards, which are the pathways to expanding a computer. You can add modems, hard-disk drives, speech synthesizers, etc. In general, a computer with slots is more easily expandable than one without. And more slots are generally desirable—though computers that have all the necessary interfaces built-in don't require as many slots, and slots can add to the size of a machine.

Ports/interfaces: Ports and/or interfaces (the terms are often used interchangeably) allow you to connect external devices to your computer. For instance, a parallel port is generally used to connect a printer, and a serial port is used to connect a modem or printer. Some computers have more exotic ports, such as the SCSI hard-disk drive port on the Macintosh and the MIDI (musical instrument digital interface) in/out ports on the Atari ST that allow you to connect a synthesizer.

Video interface: Almost all computers come with some kind of connection for a monitor or television, and most offer the potential for upgrades to sharper monitors. A television is okay primarily for games or educational software, but not for work with words or numbers. A composite video connection lets you connect monochrome monitors (good for working with words and numbers) or composite color monitors. Some computers offer an RGB (Red-Green-Blue) interface for connecting a high-resolution color monitor. There are two types of RGB interfaces (and matching monitors): digital RGB and analog RGB. Analog is the more colorful of the two, delivering up to 4,096 colors.

The IBM PC and compatibles connect to the monitor somewhat differently; read the introduction to the MS-DOS section for details.

Hardware included: To make the computer work, you'll need a monitor and at least one disk drive (two are preferable for business applications). Other items listed include numeric keypads (set up like a calculator), a mouse, and battery-powered clock/calendars.

Software included: Almost all computer systems include the disk operating system (DOS) and a version of BASIC. If not, you'll have to buy DOS, because you can't begin to compute without it. Some systems include on-disk tutorials or productivity programs; the advantage here is that you can take the computer home and start using it right away.

Text: Measured in characters by lines. For example, an 80-column by 25-line display is standard for word processing and spreadsheet work. On older computers, a 40-column by 25-line display is standard as well. On graphics-oriented computers, such as the Macintosh, the number of characters depends on the size of the type, which can vary.

Colors: Indicates maximum number of colors available for graphics or text (in parentheses), although all available colors cannot be displayed at the same time in maximum resolution. Remember that colors aren't only for games or educational packages; judicious use of color in word processors, data bases, or spreadsheets (such as Lotus *1-2-3*) can ease eyestrain and increase productivity.

Graphics resolution: Measured in pixels (dots on the screen), horizontal by vertical. The more pixels, the sharper and more detailed the display. We have listed maximum resolution.

Sound: Measured in number of voices (or channels) of sound that can be heard at one time. Stereo or monophonic (mono) output is also noted.

Other models: Notes other models sold by same manufacturer, with a brief rundown of the specs.

Remarks: In looking at each computer's strengths and drawbacks, I've assumed that you're buying a new computer. What is true about a computer's standing in today's marketplace might not have been true in the past.

APPLE IIe

List price: $1,257
Warranty: 90 days
Memory: 128K/1MB
Slots: Eight
Supplied ports/interfaces: Joystick, disk drive, cassette drive
Video interfaces: Composite
Hardware included: One external 5.25-inch disk drive (143K), monochrome monitor, extended 80-column display card, numeric keypad
Software included: ProDOS, BASIC, tutorials
Text: 40 x 24, 80 x 24
Colors: 16
Graphics resolution: 560 x 192
Sound: One channel, mono
Other models: Apple IIc ($940); 128K/1MB. Added ports include mouse, two serial, audio with volume control. No slots.

Remarks: The IIe is reliable and time-tested (even though Apple backs it with only a 90-day warranty) and runs a wealth of software—for everyone from toddlers to small-business people. However, if you want to run some of the same programs used in most offices across America, you probably should be shopping for an IBM PC or compatible. The IIe's main drawback is that it costs way more than some computers with greater power and speed (e.g., Atari 520ST and many PC clones). In addition, you'll have to buy circuit boards to add parallel and serial interfaces (about $100 each), to view graphics in dazzling colors, or to hear multiple-voice stereo sound. On the other hand, the beauty of a computer with slots is that you can make it do just about anything you want. The recently revamped IIe is now a pale gray, and the new keyboard includes an 18-key numeric pad. The keyboard matches the IIGS's, so if you upgrade later to that more powerful machine, your typing fingers will be ready.

APPLE IIGS

List price: $1,398
Warranty: 90 days
Memory: 256K/8MB
Slots: Eight
Supplied ports/interfaces: Two serial, disk drive (5.25- and 3.5-inch), AppleTalk local-area network, keyboard/mouse/joystick, audio
Video interfaces: Composite, analog RGB
Hardware included: One external 3.5-inch disk drive (800K), mouse, battery-powered clock/calendar
Software included: ProDOS, BASIC
Text: 40 x 24, 80 x 24
Colors: 4,096 (16 text)
Graphics resolution: 640 x 200
Sound: 15-channel synthesizer, mono
Other models: None

Remarks: This latest Apple II could be a champion—but there's also a chance we might someday say, "It coulda been a contenduh." Powerful hardware without a strong base of supporting software does not the best system make. While the IIGS runs most of the existing IIe/IIc programs, just a handful of programs take advantage of the IIGS's special graphics and sound. I don't doubt that the software will come, but until then, you have a more expensive, but faster (2.5 times faster) IIe with a detached keyboard. Should the promise be fulfilled, you'll have an audio/visual delight. Musicians will love the 15-voice Ensoniq chip (easily converted to stereo with a $60 board from MDIdeas, [415] 573-0580). Artists and others will appreciate the rich palette of 4,096 hues (although a 200-pixel vertical resolution is not sharp enough to do justice to these colors). When combined with add-ons such as a color digitizer that loads photographic images into the computer, the machine may be useful for desktop publishing. Business people and researchers with masses of data will want a high-speed, SCSI interface (available later this year on a plug-in circuit board), so they can add a hard-disk drive. With enough built-in ports to handle the common interfacing (such as printer and modem), the GS's eight open slots promise room for more fascinating add-ons. (And almost all Apple IIe circuit boards will work on the GS, in case you've built up a collection over the years.) All this power, of course, costs money—but you have to balance that against the ability to continually expand the machine and keep up with state-of-the art add-ons.

MACINTOSH PLUS (APPLE)

List price: $2,199
Warranty: 90 days
Memory: 1MB/4MB
Slots: None
Supplied ports/interfaces: Two serial, disk drive, SCSI (hard drive), mouse, AppleTalk local-area network, audio
Video interfaces: Not applicable
Hardware included: One internal 3.5-inch disk drive (800K), monochrome monitor, mouse, numeric keypad, battery-powered clock/calendar
Software included: Finder, desk accessories, utilities
Text: Varies with size of type
Colors: Black and white
Graphics resolution: 512 x 324
Sound: Four channels, mono
Other models: Macintosh 512K ($1,699); 512K/1MB does not include SCSI port, numeric keypad. Macintosh SE ($2,898) has monochrome monitor, two internal 800K disk drives, and one slot. Macintosh II ($5,498) has one 800K disk drive, one internal 40-MB hard-disk drive, no monitor.

Remarks: People have extreme reactions to the Macintosh. Some say the screen is too small (only 9 inches diagonally), while others claim the Mac has the clearest screen display they've ever seen. Some people miss the color, but many don't care. Some think the mouse is silly, others love it. More and more, however, people are agreeing that the Macintosh Plus—with its megabyte of memory, hard-disk drive port, and growing body of sophisticated software—is a machine ready for work. The latest and more expensive Macs, the SE and the II (*see New Hardware in the May issue*), promise to take on even greater business burdens. Because practically all software works the same way—using the powerful built-in ROM routines and the simple point-and-click operating style—many think the Macintosh is simpler to use than MS-DOS computers. (Because the machine does so much internal processing, however, it can operate slower than MS-DOS computers.) Combined with the LaserWriter printer, the Macintosh is the premier system for desktop publishing—composing and laying out newsletters and brochures on-screen. The Macintosh also has a good base of entertainment software, though it's weak in the educational arena.

ATARI 520ST

List price: $799
Warranty: 90 days
Memory: 512K/1MB
Slots: None
Supplied ports/interfaces: Serial, parallel, disk drive, DMA (hard drive), MIDI in/out, two mouse/joystick, cartridge
Video interfaces: TV, monochrome/color analog RGB
Hardware included: One external 3.5-inch disk drive (360K), monochrome monitor, mouse, numeric keypad, external power supply
Software included: GEM, TOS, desk accessories
Text: 80 x 25
Colors: 512
Graphics resolution: 640 x 200 (color), 640 x 400 (monochrome)
Sound: Three channels, mono
Other models: Atari 520ST ($999), with RGB color monitor. Atari 1040ST ($899), 1 MB. Includes one internal 3.5-inch drive (720K), monochrome monitor, and internal power supply. With RGB monitor ($1,099).

Remarks: It's almost two years old now, and the bang-per-buck on the ST is still quite remarkable, especially when you shop around. (I've seen ads from 47th Street Photo in New York City, a big mail-order company, promoting a 520ST for $495.) The ST comes with a mouse, and all software uses the effortless point-and-click operating style. The color monitor produces dazzling displays. The downside to the ST is the marginal availability of software—relative to the Macintosh or MS-DOS compatibles, for instance. While there's certainly enough ST software to do just about anything, there's still no word processor (like *XyWrite III* for the IBM) or spreadsheet (like *Excel* on the Macintosh) that takes full advantage of the ST's power—so it's probably not the best bet for users who need immediate power. Musicians, by contrast, particularly like the MIDI ports, which allow direct connection of high-powered synthesizers. The ST is for them—and for others with champagne tastes and a beer budget.

COMMODORE 128

List price: $349
Warranty: 90 days
Memory: 128K/640K
Slots: None
Supplied ports/interfaces: Disk drive, cartridge, two joystick/mouse, user expansion
Video interfaces: TV, composite, digital RGB
Hardware included: Numeric keypad
Software included: DOS and CP/M (with disk drive), BASIC, tutorial
Text: 40 x 25, 80 x 25
Colors: 16
Graphics resolution: 320 x 200
Sound: Three channel (with special sound chip), mono
Other models: Commodore 64C ($199); 64K. Comes with *GEOS*, *GEOWrite*, *GEOPaint*, QuantumLink, MECC (educational) software. Does *not* include RGB video, 80 x 25 text, numeric keypad, CP/M.

Remarks: The C 128 is an upgraded version of the long-playing C 64. With 128K, an 80-column display, and a numeric keypad, it's a much better machine for serious tasks. However, to get the full effect of the screen display, you'll need to buy a high-res RGB monitor, which adds to the original purchase price. The C 128 has the same super sound as the C 64 and runs all C 64 software, which is plentiful. (In general, both C 128 and C 64 software is less expensive than software for the Apple or IBM.) The CP/M disk operating system comes with the optimal 1571 disk drive, allowing you to run a number of high-powered (but older) business programs on the C 128. But if your budget is tight, or you're looking for a startup computer for kids, the C 64 might be a better pick. The latest C 64C model comes bundled with *GEOS*, which can be used with a mouse to give you Macintosh-like, point-and-click control of the computer. Also included are the *GEOS* word processor and paint program. The Commodore 1541 disk drive is slower than molasses, which makes kids fidget (however, you can add a disk-drive speed-up cartridge, such as *Fast Load* from Epyx); alternatively, you can use cartridge-based software, which is less expensive and faster.

AMIGA 2000 (COMMODORE)

List price: $1,495
Warranty: 90 days
Memory: 1MB/9MB
Slots: Nine
Supplied ports/interfaces: Serial, parallel, disk drive, two mouse/joystick/lightpen, two audio
Video interfaces: Analog RGB
Hardware included: One internal 3.5-inch disk drive (880K), mouse, numeric keypad, battery-powered clock/calendar
Software included: AmigaDOS, Workbench, AmigaBASIC
Text: 60 x 25, 80 x 25
Colors: 4,096
Graphics resolution: 640 x 400
Sound: Four channel, stereo
Other models: Amiga 500 ($649); 512K/9MB. With one internal 3.5-inch disk drive (880K), integral keyboard, and Systembus Expansion interface; clock/calendar optional.

Remarks: Both new Amiga computers, the expandable 2000 and the one-piece 500, promise to be good machines. (However, we have yet to see or test production models.) Both come with a mouse and use a point-and-click operating system. *Kickstart*, the startup program that used to be on disk, is now built into ROM, so there's less preamble when booting up. Superb graphics and sound make the 500 a great computer if you want to explore the growing areas of "desktop video" and music production at relatively little cost. On both Amigas, with the right software and additional devices such as Genlock (which captures and lines up video images on screen), you can combine computer graphics with photographic and video images and mix them on videotape. Adding music and sound effects to your videos is another Amiga strength, with its realistic four-voice output. All types of programs—especially games and educational programs—can be enhanced by the Amiga's built-in speech capability as well. If you need MS-DOS compatibility, the 2000 (with 9 slots) has room for the Amiga Bridge Board ($500) that makes the Amiga function like a PC/XT. You can even have an IBM-compatible program run in one window at the same time an Amiga program runs in another (multitasking). With all the power, options, and sheer newness, the Amiga may not be the best choice for first-time computer buyers who need a straight and simple path to productivity. There's less software available for it than for an MS-DOS machine or a Macintosh, and in some standard categories (such as word processors, data bases, and spreadsheets), what's available is generally less powerful. But for those more experienced, or those ready to ride the crest of the wave, both Amiga computers promise a lot of audio-visual excitement.

MANUFACTURERS' PHONE NUMBERS

Amstrad: (214) 297-4898; **Apple:** (408) 973-2222; **Atari:** (408) 745-2000; **AT&T:** (800) 247-1212; **Blue Chip Electronics:** (602) 961-1485; **Commodore:** (215) 436-4200; **Compaq:** (713) 370-0412; **ComputerLand:** (415) 487-5000; **Epson America, Inc.:** (800) 421-5426; **Fountain:** (201) 563-4800; **Franklin Computer:** (609) 488-0600; **IBM Corporation:** (800) IBM-2468; **Kaypro Corp.:** (619) 481-4300; **Leading Edge Products:** (800) 872-5323; **Panasonic:** (201) 348-7000; **PC's Limited:** (512) 339-6800; **Tandy Corp.:** (817) 390-3011; **THE** (Thompson, Harriman and Edwards): (312) 642-9626; **Wells American Corp.:** (803) 796-7800; **Zenith Data Systems:** (800) 842-9000

TANDY COLOR COMPUTER 3

List price: $220
Warranty: 90 days
Memory: 128K/512K
Slots: None
Supplied ports/interfaces: Serial, two joystick, disk drive, cassette, cartridge, audio
Video interfaces: TV, composite, analog RGB
Hardware included: None
Software included: Color Extended BASIC
Text: 32 x 16, 40 x 24, 80 x 24
Colors: 64
Graphics resolution: 640 x 192
Sound: One channel, mono
Other models: Color Computer 2 ($100), with 32 x 16 text display, 64K, and TV connections only.

Remarks: The new Color Computer 3 improves on the CoCo 2 in a number of ways. Significant additions include an analog RGB interface that gives you up to 64 high-resolution colors, when matched with Tandy's CM-8 RGB monitor ($300). At the same time, you can use a TV for display, which makes a fine system for young kids. The standard 128K memory, along with an 80 x 24 text display (RGB or high-res monochrome monitor needed), suggests the ability to run sophisticated software (once you add a disk drive for $300). And the sophisticated OS-9 Level 2 operating system lets you run two or more programs at once (multitasking), a powerful attribute that only the Amiga can match. High-level software has been slow in coming, but while you wait you can use most of the software and hardware that works with the older CoCo 2. However, when you compare the availability of CoCo software to computers in a similar price range (such as the C 128 or Apple IIc), you'll probably find more programs for those other machines. But for sheer number of service outlets, you can't do better than the Radio Shack chain.

IBM (MS-DOS) COMPATIBLES

Why get an IBM PC or compatible rather than another type of computer? Probably because you want a productivity workhorse at a good price or because you need to run a program at home that you use at the office. With the growth of educational and entertainment software for the compatibles, an IBM compatible can be a good general-purpose machine, too. Just don't expect the great color graphics or quality sound found in newer computers, such as the Amiga or Atari ST, without large outlays of cash for extra peripherals.

One of the most confusing things that confronts the first-time IBM-compatible shopper is the number of different video interfaces. And since different software requires different interfaces and monitors, it's important to know what you want to do with the machine. For instance, most color software (mostly games and educational packages) requires a color graphics adapter and a color monitor; and some monochrome software, such as Lotus *1-2-3*, requires a monochrome graphics adapter and a monochrome monitor.

Video interfaces: The most common video connections are: IBM monochrome (640 x 350 resolution, text only); Hercules monochrome graphics (720 x 348 resolution; some PCs emulate the video standard set by the Hercules company); CGA (color graphics adapter; 4 colors, 640 x 200 maximum resolution); and EGA (enhanced graphics adapter; 16 colors, 640 x 350 maximum resolution). Also note that your monitor must be compatible with the video interface; for instance, not all color monitors can take advantage of the EGA's richer colors and sharper text.

Speed: While a microprocessor's speed can be measured in megahertz (MHz), it's only fair to make relative judgments of speed within a single type of computer, such as MS-DOS compatibles. The basic PC speed is 4.77 MHz, but you'll find many with a second, higher speed of 7.16 or 8.0 MHz. Higher-class PC/ATs run even faster. In any case, greater speed is almost always welcome, since it makes many computing tasks (such as sorting lists, recalculating spreadsheets, scrolling through documents, or generating complex graphics) take much less time. With dual-speed PCs, you'll most likely use the slower speed solely for most games and some educational programs.

The class of machines reviewed here is IBM PC/PC XT and compatibles. The faster and more powerful IBM PC/AT and compatibles will be considered in an upcoming Home Office section. Other major brands not reviewed here include AT&T, Compaq, Computerland, Franklin, Fountain, Victor, Zenith, and Sperry. As PCs become more generic, mail-order becomes another way to buy. Noteworthy brands here include PC's Limited, PC Network, and Wells American Corp.

IBM PC/XT

List price: $2,295
Warranty: 90 days
Memory: 256K/640K
Speed: 4.77 MHz
Slots: Eight
Supplied ports/interfaces: None
Video interfaces: None
Hardware included: Two internal 5.25-inch disk drives (360K), numeric keypad
Software included: IBM-DOS, BASIC ($95 extra)
Text: 80 x 25
Colors: 16 (with CGA)
Graphics resolution: 640 x 200 (with CGA)
Sound: One channel, mono
Other models: IBM PC/AT ($5,295); 512K/3MB; includes one internal floppy disk drive (1.2MB) and 30Mb hard-disk drive; speed is 8 MHz; one-year warranty

Remarks: Why buy an IBM PC/XT instead of one of the many less-expensive clones? The base unit is expensive, and you then have to pay extra for parallel and serial ports, the video interface, IBM PC DOS, and documentation. IBM makes sense if you're willing to pay extra for peace of mind. There's nothing like using the machine that set the standard to generate real security, because

you know all software and add-on hardware will work with it. The IBM PC/XT is solid and well-built (though backed by a meager 90-day warranty), and the once maligned keyboard now has a good layout and a crisp feel. But the PC/XT is much slower than most of its imitators; graphics-intensive applications such as desktop publishing or *Microsoft Windows* (which gives the PC a Macintosh-like interface) run painfully slow. Besides, IBM has now introduced its Personal System/2 line with four pepped-up new computers (see special section on page 48A). For example, the least expensive Model 30 ($1,945 with monochrome monitor and two 3.5-inch disk drives) offers enhanced graphics, 640K memory, and built-in serial, parallel and mouse ports. If you're set on the IBM brand, don't overlook the new machines before picking your model.

AMSTRAD PC 1512 DDM

List Price: $899
Warranty: One year parts; 90 days labor
Memory: 512K/640K
Speed: 8 MHz
Slots: Three
Supplied ports/interfaces: Serial, parallel, battery-powered clock/calendar, joystick, mouse, light pen
Video interfaces: Monochrome graphics, color graphics
Hardware included: Two internal 5.25-inch disk drives (360K), monochrome monitor, mouse, numeric keypad
Software included: MS-DOS, DOS Plus, *GEM Desktop*, Locomotive BASIC, *GEM Paint, GEM Doodle*
Text: 80 x 25
Colors: 16
Graphics resolution: 640 x 200 (color); 720 x 348 (monochrome)
Sound: One channel, mono (with volume control)
Other models: Includes PC 1512 DDC ($1,099), with RGB color monitor and PC 1512 HDC ($1,499), with RGB color monitor and 20 MB hard drive.

Remarks: With attractive, sculpted lines, this British import (it's a big seller in the U.K. and Europe) makes a strong first impression. When you count up all that's included in the package, and how reasonable the price is, you'll continue to be impressed. Not only do you get a full collection of ports and interfaces and a few slots for extras, the PC 1512 also includes a mouse and the GEM software to give you icons and drop-down menus. The package runs all software at a sharp 8.0 MHz; but it has no slow speed, which might have an adverse affect on game-playing. This might be a great PC, but there's one problem, and it's potentially a large one: Amstrad built the power supply into the monitor. This awkward arrangement means you have to use the Amstrad monitor. What if you can't find another Amstrad monitor if the power supply breaks? Fortunately, the monitor has great color graphics. In general, the Amstrad appears to be a fine value.

ATARI PC

List price: $700
Warranty: 90 days
Memory: 512K/640K
Speed: 4.77 and 8.0 MHz
Slots: None
Supplied ports/interfaces: Parallel, serial, mouse
Video interfaces: Monochrome graphics, CGA, EGA
Hardware included: One internal 5.25-inch disk drive (360K), mouse, numeric keypad, monochrome monitor
Software included: MS-DOS, *GEM, GEM Paint, GEMWrite*
Text: 80 x 25
Colors: 64
Graphics resolution: 640 x 350 (for EGA)
Sound: One channel, mono
Other models: Atari PC ($499), with one disk drive, no monitor, no EGA interface.

Remarks: The PC is another Atari "power-without-the-price" special—three major IBM video interfaces are built into one consumer-priced machine. The EGA interface, with its greater palette and resolution, is worth around $200. And the computer comes with an EGA monochrome monitor, which is worth about $300. A mouse and the GEM icon-based operating system is included, unusual for an IBM compatible, and the Atari PC runs at the rapid 8.0 MHz needed to make GEM run properly. With all the basics in one compact package at a low price, this PC could be a good deal, especially for beginners. (I say "could" because we've yet to see and test a production model of the machine; according to Atari, it will be available by August of this year.) One major disadvantage is that the computer comes with only one disk drive, and almost all productivity software requires two drives. You can add a second, but it will be external. And the keyboard is not detached from the unit, as on most compatibles, so you have less control over your typing position.

BLUE CHIP PERSONAL COMPUTER XT

List price: $599
Warranty: 360 days
Memory: 512K/640K
Speed: 4.77 MHz
Slots: Six
Supplied ports/interfaces: Serial, parallel
Video interfaces: Hercules-compatible monochrome
Hardware included: One 5.25-inch disk drive (360K), numeric keypad
Software included: MS-DOS
Text: 80 x 25
Colors: 16 (with CGA)
Graphics resolution: 720 x 348
Sound: One channel, mono
Other models: None

Remarks: The initial price may be tempting, but to bring your system up to the configuration of many PCs, you'll need a monitor ($100), a second disk drive ($140), and MS-DOS 3.2 and GW BASIC ($100). (NOTE: *According to the manufacturer, a version of MS-DOS is now bundled with the system; however, in shopping for a Blue Chip PC recently, DOS was an additional $100.*

Be sure to look for a Blue Chip package with MS-DOS included.) That'll bring you to $940—still a good price, but not as amazing as it might have appeared initially. And you'll have to install the second disk drive yourself. What you get for your money is plain vanilla, many people's favorite flavor. The Blue Chip will run all IBM PC/XT software, the keyboard is well laid out and adequate for all but the most heavy-duty typing (the keys offer a decent but not excellent touch, like most less-expensive clones), and its six empty slots give many pathways to expansion. It also has a 130-watt power supply (should you want to add a hard-disk drive).

COMMODORE PC 10-2

List price: $1,199
Warranty: One year
Memory: 640K
Speed: 4.77 MHz
Slots: Five
Supplied ports/interfaces: Serial, parallel
Video interfaces: Hercules-compatible monochrome, CGA
Hardware included: Two internal 5.25-inch disk drives (360K), numeric keypad
Software included: MS-DOS, BASIC, *Sidekick*
Text: 80 x 25
Colors: 16
Graphics resolution: 640 x 200 (CGA); 720 x 348 (monochrome)
Sound: One channel, mono
Other models: PC 10-1 ($999); 512K/640K. With one disk drive.

Remarks: The PC 10 series has been a big success in Europe, and one wonders why Commodore didn't bring it to the United States sooner. Now, with all the competition, the PC 10 runs the risk of getting lost in the crowd. This sturdy-looking PC with the big footprint is plain vanilla (only 4.77 MHz) with chocolate sauce (CGA video interface and 640K). You'll also find sprinkles on top with the bundling of Borland's *Sidekick* desk-accessory package—a truly helpful extra. The keyboard has a firm touch, and it's lighter than most (which is good if you like to work with the keyboard in your lap). If you prefer the Commodore brand, try to find the PC 10-2 at a discount.

EPSON EQUITY I

List price: $995
Warranty: One year
Memory: 256K/640K
Speed: 4.77 MHz
Slots: Three
Supplied ports/interfaces: Serial, parallel
Video interfaces: None
Hardware included: Two internal 5.25-inch disk drives (360K), numeric keypad
Software included: MS-DOS, BASIC
Text: 80 x 25
Colors: 16 (with CGA)
Graphics resolution: 640 x 200 (with CGA)
Sound: One channel, mono
Other models: Equity I ($795), with one disk drive; ($1,395), with one disk drive and one internal hard drive (20MB). Equity II ($1,395); 640K; includes dual-speed microprocessor (4.77 and 7.16 MHz), five slots, battery-powered clock/calendar, and monochrome, Hercules-compatible, CGA, and composite video ports.

Remarks: A number of factors make the Equity line stand out among the compatibles. The Equitys include an attractive main unit that takes up little desk space, a keyboard with a noticeably springy touch, and a full one-year warranty from a well-established company. Before your Equity I system is complete, however, you must add a monitor, either monochrome ($149, with $129 interface) or RGB color ($549, with $149 color graphics interface). Many dealers, of course, bundle the monitor and video board in their sales packages. The main drawback to the Equity I is the lack of expansion potential. You'll use one slot to expand the memory from 256K, and one for the video interface, leaving just one open slot. If you think your needs are likely to expand, you might want to look at the Equity II; it adds two slots, a dual-speed mode, a clock/calendar, multiple video ports, and comes with 640K of memory.

KAYPRO PC

List price: $1,595
Warranty: One year
Memory: 768K
Speed: 4.77 or 8.0 MHz
Slots: Nine
Supplied ports/interfaces: Serial, parallel
Video interfaces: Hercules-compatible monochrome, CGA
Hardware included: Two internal 5.25-inch disk drives (360K), monochrome monitor, numeric keypad, battery-powered clock/calendar
Software included: MS-DOS, BASIC, *WordStar 4.0* (w/mailmerge and spelling checker), *Polywindows*
Text: 80 x 25
Colors: 16
Graphics resolution: 640 x 200 (color), 720 x 348 (monochrome)
Sound: One channel, mono
Other models: Kaypro PC-30 ($1,695); 768K. Includes one internal 5.25-inch disk drive (360K) and one internal hard drive (30MB).

Remarks: The PC is a typically well-built Kaypro computer, with the usual Kaypro software package (the *WordStar* word processor). You can't go too wrong with this basic PC system, especially with its dual-speed microprocessor, full memory (768K), and modular construction that allows for future expansion. (You can replace the main microprocessor, since it comes on a circuit board.) Though the main unit takes up a lot of desk space, it gives you a lot of flexibility. Even with the serial and parallel ports and the video interface, you still have six open slots. The keyboard is only adequate to the touch, but the Kaypro is still a good, reliable choice.

LEADING EDGE MODEL D

List price: $1,295
Warranty: 15 months
Memory: 512K/768K
Speed: 4.77 and 7.16 MHz
Slots: Four
Supplied ports/interfaces: Serial, parallel
Video interfaces: Hercules-compatible monochrome, CGA
Hardware included: Two internal 5.25-inch disk drives (360K), monochrome monitor, numeric keypad
Software included: MS-DOS, BASIC, *Leading Edge Word Processor* (with spell-checker)
Text: 80 x 25
Colors: 16
Graphics resolution: 720 x 348 (monochrome); 640 x 200 (color)
Sound: One channel, mono
Other models: Model D2 ($1,936), with 640K, two 1.2-MB floppy-disk drives, runs at 10 MHz.

Remarks: After you spend time looking at all the different PC compatibles, the little things start to stand out. That's what many people notice about the Leading Edge Model D. They like the accurate touch of the keyboard and the compactness of the main unit. They like the dual speed, the solid word processor that comes with the computer, and one of the longer warranties around (15 months). What's not to like? Because of its small footprint, there are fewer slots (four) than on some other compatibles. But you get a lot more than you give up with the Model D, a highly recommended IBM compatible.

PANASONIC BUSINESS PARTNER FX-600

List price: $1,249
Warranty: 1 year
Memory: 256K/640K
Speed: 4.77 and 7.16 MHz
Slots: Six
Supplied ports/interfaces: Parallel
Video interfaces: None
Hardware included: Two internal 5.25-inch disk drives (360K), battery-powered clock/calendar, numeric keypad
Software included: MS-DOS, BASIC
Text: 80 x 25
Colors: 16 (with CGA)
Graphics resolution: 640 x 200 (with CGA)
Sound: One channel, mono
Other models: None

Remarks: Compare the Business Partner to the Leading Edge Model D, and you'd likely call it a stand off. You get more slots with the Panasonic (six), but the Leading Edge has more interfaces built in. Both have excellent keyboards without the mushy touch often found in less expensive machines, and both run at 7.16 MHz to speed productivity. The Panasonic is more heavily discounted than a lot of PCs, making even hard-drive configurations seem inexpensive ($1,699 retail with a 20-MB hard-disk drive). However, it doesn't come with a video interface or monitor, so figure that in your pricing calculations. With a one-year warranty from an established company, the Business Partner is a safe choice.

TANDY 1000 SX

List price: $999
Warranty: 90 days
Memory: 384K/640K
Speed: 4.77 or 7.16 MHz
Slots: Five
Supplied ports/interfaces: Parallel, light pen, two joysticks, audio
Video interfaces: Monochrome, CGA, composite
Hardware included: Two internal 5.25-inch disk drives (360K)
Software included: MS-DOS, BASIC, *DeskMate II*
Text: 40 x 25, 80 x 25
Colors: 16
Graphics resolution: 640 x 200 (CGA)
Sound: Three channel, mono
Other models: Tandy 1000 EX ($599); 256K/640K. Includes only one disk drive and *Personal DeskMate* software. Adds audio port with volume control; no light pen port.

Remarks: As packages go, the SX is almost complete; just add monitor (monochrome, $130, or RGB color, $300–$460) and your choice of printer. The SX is well-made, easy to set up, and can run at 7.16 MHz. The new *Deskmate* II is an especially easy-to-use integrated package with enough features to become your main program. (*Personal Deskmate*, which comes with the EX, is not nearly as complete.) Just realize that you're getting a keyboard without the standard IBM layout, especially the placement of the function keys across the top rather than down the left side. Also, some software has to be reconfigured to run properly. Even though the keyboard has a crisp feel, people with large hands often find the keys are too cramped together. While you can use third-party expansion boards in some circumstances, it's safer to stick with Tandy's own boards. On the one-drive EX, you *must* use special Tandy boards. If these limits don't disturb you, the SX and EX are well-made computers with a feature no other IBM compatible offers: three-voice sound. And, of course, the virtually omnipresent Radio Shack outlets mean that you'll never be too far from service, information, and software. FC

Top 10 Computer-Based Home Businesses

IDEAS FOR GETTING STARTED, WITH TIPS FROM THOSE WHO'VE ALREADY DONE IT

BY LYNIE ARDEN

Fourteen million Americans work at home, and their ranks are growing daily. Computers are certainly driving this trend—homeworkers are twice as likely as the general population to own computers, according to the 1986 National Work-At-Home Survey sponsored by Electronic Services Unlimited (ESU), a New York-based research firm. In fact, ESU says the leading reason for using a computer at home today is to produce an income. Computers are being used by moonlighters, part-timers supplementing their spouse's income, and full-time electronic cottagers.

How you can use your computer to make money is limited only by your imagination. To get you started, here's an overview of the 10 most popular computer-based home businesses, as indicated in a survey of the 500 members of The Association of Electronic Cottagers. (The AEC's electronic home is the Working From Home Forum on CompuServe.) The survey is by no means scientific—but the results have the ring of truth to them. Each description includes a profile of one person who has succeeded in that business.

TYPESETTING

The composition industry has changed a great deal over the past few years, as computers came into the picture. Previously, typesetting had to be done almost exclusively on expensive equipment in typesetting shops. Now, input operators in several different locations can use computers at home to transmit coded text to one typesetting shop's specialized printer, even one in another state. The codes instruct the printer to use a specific type size or style, to print type in **bold** or *italics*, and to insert special characters or symbols.

The use of home keyboarders has become commonplace within the type composition industry because it helps to stabilize costs. It's so common, in fact, that a spokesperson for the National Composition Association claims anyone who can type can probably find work just by looking through the Yellow Pages and calling five or six typesetting companies. Since they all use different software and formats, typesetting shops expect to train new keyboarders. The most important qualification is to be an accurate typist.

Wanda Welliver

Wanda Welliver, of Omaha, Nebraska, worked as a home typist (using a typewriter) for many years. She lost her job, she says, with the advent of computers. Later, Welliver resolved: "If you can't beat 'em, join 'em."

Now she works at home for a local printer, imbedding code in text for magazine articles, newsletters, and books. "It took me three months to learn the basics of computers, formatting, proofreading, and copyediting," she says. "Not bad, considering I'd never seen a computer before!"

Welliver uses an IBM PC, *Wordstar*, and *Webster's Spelling Checker*, and a modem to send copy to the typesetter. Like most home typesetters, she's paid a set rate for each character entered, and earns from $75 to $500 a week. The average home typesetter's wage is $12–$25 per hour.

BOOKKEEPING

Computers have given independent bookkeepers a big competitive boost by increasing their efficiency and range of services. In the time it takes to write your monthly checks, you could use a computer to prepare a check register, print out your checks, and use the information to compile an income statement and balance sheet, too. And that's what bookkeepers do.

The best place to look for bookkeeping clients is among new and small businesses that have limited record-keeping experience. Your basic service (accounts payable and receivable

Norman and Barbara Eide

LYNIE ARDEN *is editor and publisher of* Worksteader News, *a newsletter that acts as a national clearinghouse for work-at-home opportunities. A sample is available for $1 from TWN, Box 8021, Rancho Cordova, CA 95670. She is also the author of* The Work-At-Home Sourcebook.

and an income sheet) should cost the client about $75 a month and take two or three hours to complete.

Norman and Barbara Eide operate Bottomline Bookkeeping from their Sacramento, California, home. They use an Apple IIe, an ImageWriter printer, and *General Accounting* software (BPI Systems).

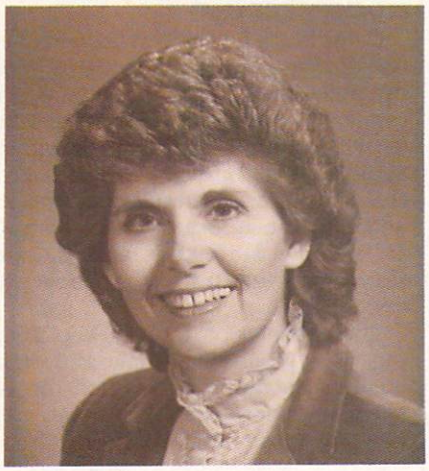
"This is not a business for amateurs," says Norman. "It requires a solid background in bookkeeping and attention to detail." He has found that providing personal consultations and reliable service are the keys to keeping clients.

As for working at home, Norman says: "We wouldn't be in business if we couldn't use our home for office space. To pay rent on commercial office space would be financially impossible. The fringe benefits are great!"

WRITING

Writing is a traditional home business; only the tools have changed. Writing still requires an ability to convert thoughts into words, but the editing and rewriting process is easier with a word-processing program and spelling checker.

The best opportunities today are in technical writing and business writ-



Dana Cassell

ing for trade journals, or health, fitness, and travel writing. Once you get started, you can expect to find steady work in those areas.

Technical writers translate technical, scientific, and other complex information into language the layperson can understand. They write labels for paint cans, instruction pamphlets for microwave ovens, and user manuals for computers. For a full-time freelancer, an annual income over $30,000 is typical.

Dana Cassell had been a business writer for many years, but she has taken the business a step further. Five years ago, she started the Florida Freelance Writers Association in her Fort Lauderdale, Florida, home to help other writers find work. It has since evolved into two writer data banks, computerized data bases that list writers throughout the country and categorize them by geographic area, expertise, type of writing, and level of experience. When an editor needs a writer, Cassell fills the order immediately. Writers pay $25 to be listed for a year, and agree to pay Cassell 5 percent of any work they get through her.

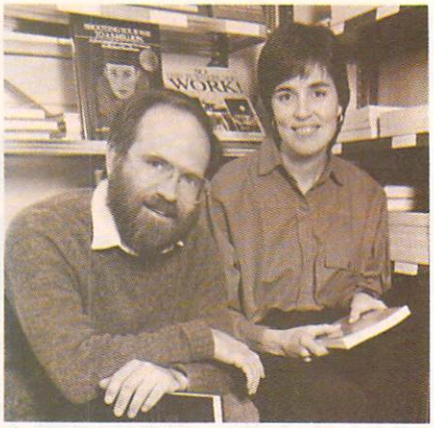
"People want to become writers because they like to read and think," says Cassell. "A good writer is a perpetual student. You don't have to be an expert in anything, you just need to enjoy learning about everything and putting it down on paper to tell the rest of us all about it."

Cassell is a confirmed homeworker. "At one point, I thought I'd be more productive without the distraction of four kids around, so I rented an office. I was wrong. Three months later I was back home for good."

DESKTOP PUBLISHING

Desktop publishing, one of the newest computer businesses, is among the most expensive to start. You'll spend about $8,000 for the basic system—a 512K computer, page-layout and word-processing software, and a laser printer. If you're not ready to make that commitment, you can rent the hardware by the month or buy the computer and rent time on a laser printer.

Desktop publishing is simply a technological shortcut that gives you the ability to design pages and merge text and graphics on a computer screen. Then, you can print out your page on a laser printer or transmit it to a typesetter.



Tom and Sue Ellison

Desktop publishing is commonly used to produce newsletters and restaurant menus, but you can use it to create just about any business document. Fliers, brochures, catalogs, and price lists are just a few examples.

Some home-based desktop-publishing entrepreneurs have even started commercial publishing houses that print books. Such a venture requires sophisticated software that is capable of formatting many pages at once.

Tom and Sue Ellison publish books and catalogs from their Boulder, Colorado, home using a Macintosh system. "The cost of the system is cheap when compared to traditional typesetting equipment and graphic artists' fees," says Tom. "Once you've published three books, the system has paid for itself. In addition to saving time and money, you reduce errors because the text is only keyboarded once."

INFORMATION RESEARCH AND BROKERING

Data-base research is no different from going to the library except that the tools are a little more sophisticated. Beyond a basic understanding of how to conduct research, electronic research requires no special background unless you intend to specialize in a particular field. If you've ever done a term paper, you know the basics of what's involved.

You'll need a computer, a modem, communications software, and a printer. The type of printer you need depends on the market you plan to service. A letter-quality printer is recommended for cover letters and summaries for doctors, lawyers, or other professionals. A dot-matrix printer is fine for raw data and general business reports.

Your biggest up-front expense will

RESOURCES

The Association of Electronic Cottagers
P.O. Box 1738
Davis, CA 95617-1738
(916) 756-6430
Membership: $15/yr.

National Composition Association
1730 North Lynn St.
Arlington, VA 22209-2004
(703) 841-8165
Membership: $240/yr.

Society for Technical Communication
815 Fifteenth St. NW
Washington, D.C. 20005
(202) 737-0035
Membership: $50/yr.

Writer Data Banks
Cassell Communications
P.O. Box 9844
Fort Lauderdale, FL 33310
(800) 351-9278
Listing: $25/yr.

be at least $1,000 for books, database subscriptions, on-line learning time, and classes given by each database vendor. To find out what data bases are available, look for the two-volume *Datapro Directory of Online Services* (Datapro Research Corporation; [609] 764-0100) at your local library.

The ongoing expense of access time (the range is from $30 to $600 an hour) will be paid by clients. The key to keeping costs down is to prepare a search strategy; have a list of specific questions and know where to look before you log on. There are different methods of charging for such a service, but an easy rule of thumb is to multiply the cost of on-line time by a factor of 1.5 to 2.5, depending on your degree of specialization or how the client wants the research prepared. For example, if you spent five hours on an electronic data base at a prime-time connect charge of $35 an hour, you would charge the client $262.50 to $437.50. (*See next month's Telecomputing department for an article about on-line research.*)

John Everett, of Irving, Texas, specializes in legal and business research; his company's name is Re-

John Everett

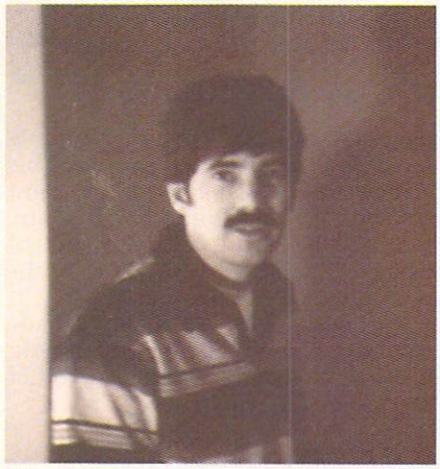
sponse Time. "I try to confine my marketing efforts to people who understand the value of information," he says. "I reach lawyers through direct mail and by attending local Bar Association meetings and conventions."

Any type of business that needs information for decision-making—such as a market-research, public-relations, or advertising firm—is a potential client. But it pays to specialize in one subject area. "A generalist," says Everett, "might spend half the time explaining the on-line services to potential clients."

What's the best thing about working at home? "The 30-second commute down the hall," says Everett. "But it's also the worst thing. It's important to keep your work space separate so you can shut the door and forget it at the end of the day."

WORD PROCESSING

Word-processing businesses are popping up everywhere, but the field has a long way to go before it reaches the saturation point. Two of the most lucrative markets for word-process-



Steve Green

ing services are legal, for depositions and briefs, and medical, for narrative summaries and correspondence. Both require a knowledge of the jargon and technical terms, hence the high pay, which ranges from $15 to $45 an hour.

The easiest place to find business is on a college campus. Most students don't have typewriters—let alone computers—but they do need to write term papers, theses, and many other assignments. Word-of-mouth advertising can eventually get you all the business you can handle. To get your first customers, place an ad in the school newspaper, pay the campus bookstore to insert your fliers into textbooks, or do both. A reasonable rate may be $1 per double-spaced page. A good typist can produce about 10 pages per hour.

Your computer, a word-processing program, and a printer will get you started. Choose a keyboard with a good touch and, if possible, word-processing software that will save text as you enter it.

Steve and Joy Green have taken their home business, Green's Machine, to a high level. Their clients are major corporations in the Milwaukee, Wisconsin, area. They have so much business they farm out work to 30 independent contractors.

"Working at home is like time shifting," says Steve. "You have a lot more freedom of choice in what you do each day. You can rearrange your schedule according to your family's needs. At home, without the office rituals and distractions, you'll find you can accomplish in five hours what used to take you eight. The remaining three hours—not to mention commuting time—can be spent any way you wish."

MAILING-LIST SERVICES

A mailing-list service is the easiest computer business to start. It's a low-overhead, fast-start business that requires little technical know-how.

The basic service is mailing-list maintenance; that is, typing names and addresses into a data base, printing them out on labels whenever the customer needs them, and keeping the list updated. From this basic service, your business can expand into other areas, such as bulk-mail preparation, design, layout, and typeset-

Steven Fletcher

BOOKS

Electronic Publishing Buyer's Report (Debra L. McCusker; DEEMAC, Inc. P.O. Box 833 Farmingdale, N.J. [201] 370-2095; $4.95)

Getting a Good Start in a Mailing Services Business (Steven L. Fletcher; Ad Mail Management, P.O. Box 1389, Yuba City, CA 95992-1389; $4)

How to Succeed as an Independent Consultant (Herman Holtz; John Wiley & Sons; $19.95)

The Information Broker's Handbook: How to Profit from the Information Age (John Everett; Ferret Press; Suite 0-69, 314 MacArthur Commons, Irving, TX 75062; $24.95)

Marketing Accounting Services (Robert W. Denney; Van Nostrand Reinhold; $28.95)

Programmer's Market (Brad McGeHee; Writer's Digest Books; 9933 Alliance Road, Cincinnati, OH 45242; [513] 984-0717; $16.95)

ting of mailing pieces, and mailing-list rental and brokerage.

You don't need a fancy computer system to perform most of these tasks. When Steven Fletcher started his home business, AD Mail Management, in 1978, he had a TRS-80 Model I, a mailing-list program, and a dot-matrix printer. "As long as you have enough on-line capacity to handle 3,000 addresses at a time, you can do well," he says. Today, with help from his wife, Fran, a graphic artist, Steven offers a full range of services—with a Tandy Model III, two Macintoshes, and a LaserWriter printer.

Mailing-list maintenance is another business-to-business service. Look for the business that is too small to have its own computer supplier, but has a customer list of 1,000 to 3,000. Inform other business owners in your area about your services, and talk to local printers. Since they print the mailing pieces, they get a lot of inquiries about mailing services, and may agree to send people your way.

You'll want to compare your fees with the competition's before you start. Steven charges 15 cents to enter an address and 5 cents each time he prints it on a label. "I can key in 150 addresses per hour," he says. "The real gravy, though, comes when I print out the labels. That's pure profit for virtually no effort."

CUSTOM PROGRAMMING

It's getting tougher to break into custom programming. The field is so crowded, the rates have been driven down to an average of $20 an hour. Finding a three- or four-month job is easy enough; sustaining it is the hard part.

One way to break in is to be a very good programmer with specific skills in languages such as C and Assembly and to have some understanding of compilers. Find yourself a niche where others may not have any background.

After five years of full-time custom programming from his home in a remote Maine community, Phil Neal, owner of dba MicroServices, has a client base ranging from a three-person architects' office to the United States Navy. Most of his business comes from word-of-mouth referrals.

Neal does not write programs from scratch but takes existing software and customizes it for his clients' needs. The key to success, he says, is to become better schooled in business applications and systems analysis. "You must have a sense of systems design before you can expect to

Phil Neal

alter that system. The programming is nothing; it is after the fact. It's critical to find out how people want something to work and create a system that will work that way, taking into consideration the abilities of the person who's going to use it."

Neal says, "I live in a very remote community, and it would be very difficult to envision working any other place except home."

DATA ENTRY AND PROCESSING

Home-based data processors usually work under contract to corporations or service bureaus. Carolyn Hyde is one of 100 "cottage keyers" working under contract with Blue Cross/Blue Shield of South Carolina. Her job is to enter data coded from health insurance claims and send it via modem from her IBM PC at home in Lugoss, South Carolina, to the company's mainframe in Columbia.

Carolyn worked in-house for Blue Cross/Blue Shield for over a year before moving home to work. As an in-house employee she received a base salary. Now she's paid for each line of data entered. "It's nice to get paid for what I do. I know if I want more money, I simply have to work more to get it. And I average more money per hour working this way.

Carolyn Hyde

"The best thing about working at home is not being confined to a 9-to-5 job. If I want to take my kids to school in the morning, I can—and I don't have to make any excuses for being late to work!"

COMPUTER CONSULTING

Consulting demands your personal attention to clients' needs and problems. Patience, perserverance, and the ability to listen are three major attributes that a consultant might find helpful. Your client has business experience, and you have computer

Dan Sternklar

experience—you need to educate each other until you find a solution.

In addition to having the latest equipment, it's also important to keep abreast of the industry. Regularly read trade journals, books, and magazines. Attend users' group meetings and trade shows. These are perfect places to find clients, too.

Consulting is a potentially rewarding field, but it's not a get-rich-quick venture. Initially, be careful not to take on an overload—no matter how attractive those dollar signs look.

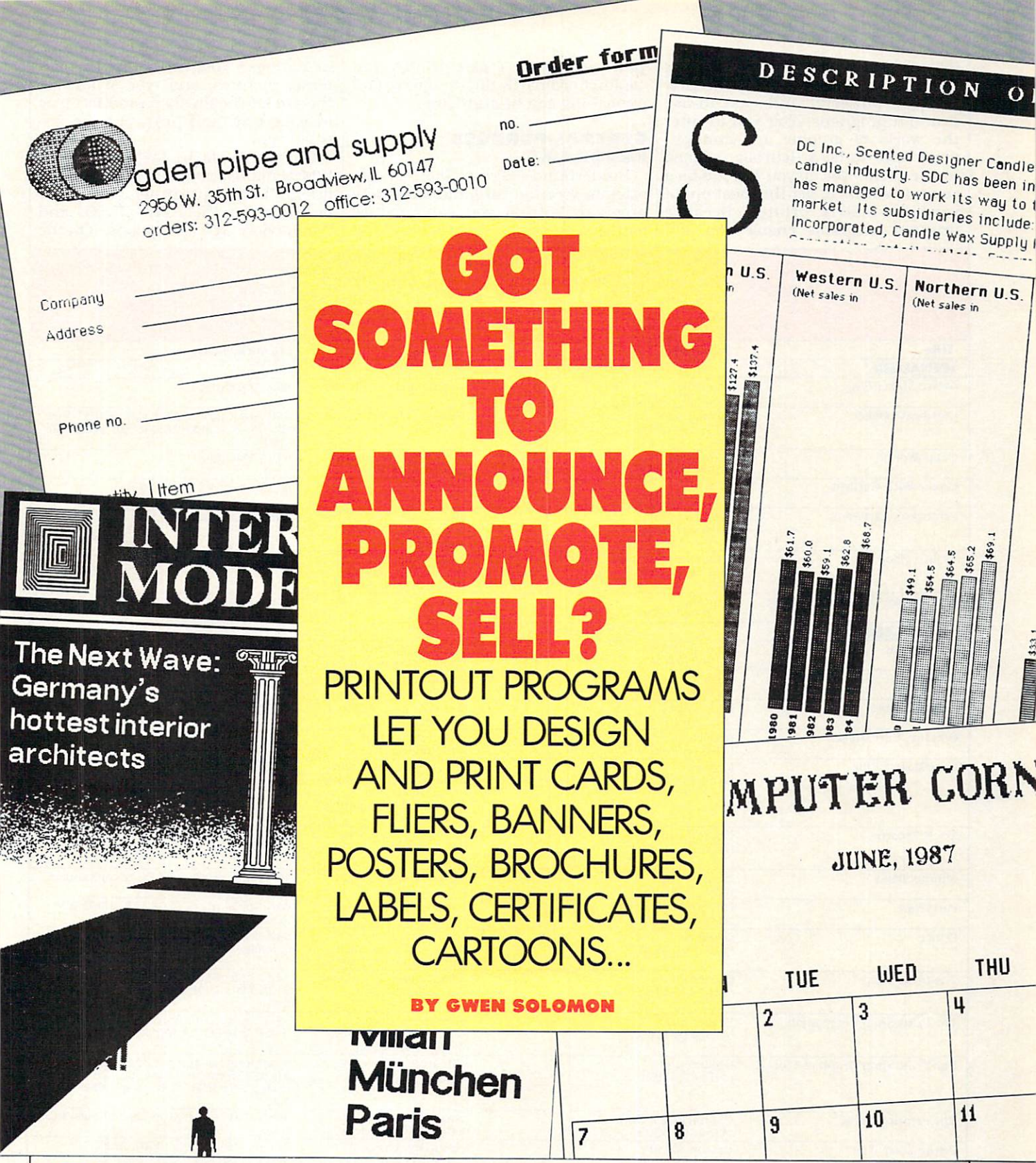
Dan Sternklar's Ohio-based firm, Clear Star International, has grown into a highly respected network of over 50 home-based consultants. "We have people from all walks of life, programmers and non-programmers. As a novice, you could start out on your own by doing volunteer work. Or you could gain experience by working for someone like us.

"The important thing," Sternklar says, "is to establish a reputation. We literally treat each project like it could make us or break us—and it's true. Working at home is a mixed bag. It offers a creative environment, and the independence is great. But you have to be self-motivated and keep everything in perspective." FC

GOT SOMETHING TO ANNOUNCE, PROMOTE, SELL?

PRINTOUT PROGRAMS LET YOU DESIGN AND PRINT CARDS, FLIERS, BANNERS, POSTERS, BROCHURES, LABELS, CERTIFICATES, CARTOONS...

BY GWEN SOLOMON



Gone are the days of three-by-five index cards and scribbled notes on supermarket bulletin boards. This is the age of computer-designed fliers decorated with artwork and fancy fonts. Many merchants and professionals display computer-designed signs to advertise their stores, products, or special sales. Dot-matrix and even laser printouts—incorporating graphics, text, and sometimes, color—are everywhere.

For virtually every computer, there's software that will produce custom greeting cards, fliers, awards, invitations, brochures, calendars, labels, posters, banners, and even cartoons. All you need are the basics: a

GWEN SOLOMON, *who writes software reviews for* FAMILY COMPUTING, *is computer coordinator at Adlai Stevenson High School in New York City.*

disk drive and a dot-matrix printer that's compatible with your software.

These powerful and easy-to-use printout programs allow you to enter the world of graphic art—and you don't have to be artistically inclined to use them. Nor do you have to be a computer whiz to get the most out of your dot-matrix printer. Because printout programs enable you and your printer to create things you couldn't ordinarily do, designing and publishing can be gratifying.

GENERAL-PURPOSE PROGRAMS

Broderbund's *Print Shop* is the original greeting card and stationery program. With it you can produce banners, signs, fliers, stationery, and invitations. You select border patterns, pictures, and type styles, set the size of the finished product, type in your text, and print out the finished copy.

On the Apple II, Macintosh, and IBM versions, you can preview your design before printing; you can't, however, on the Atari XE/XL and Commodore 64/128 versions. (On the

PRINTOUT PROGRAMS

Title	Publisher	Features	Hardware/Cost
SPECIALIZED *			
Award Maker Plus	Baudville (616) 957-3036	awards and certificates	64K Apple ($40)
Certificate Maker	SpringBoard (612) 944-3915	awards and certificates	64K Apple ($50); C 64/128 ($50); 256K IBM PC & compatibles ($60); 512K Mac ($60)
ComicWorks	Mindscape (312) 480-7667	comics, cards, posters, large posters	512K Mac ($80)
Create With Garfield	DLM (214) 248-6300	comics	64K Apple; C 64/128 ($30)
Principal's Assistant	Learning Well (516) 621-1540	awards and certificates, invitations, letters, bulletins	64K Apple ($60)
T-Shirt Shop	Spinnaker Software Corp. (617) 494-1200	create your own graphics; 7 iron-on transfers included	128K Apple IIe/IIc ($50)
Walt Disney Comic Strip Maker	Bantam (212) 765-6500	comics	64K Apple ($40)
GENERAL-PURPOSE *			
DeluxePrint	Electronic Arts (415) 571-7171	cards, signs with famous-people graphics	Amiga ($100)
Fontasy	Prosoft (818) 765-4444	28 fonts for cards, signs, newsletters	640K IBM PC & compatibles ($70)
GraphicWorks	Mindscape (312) 480-7667	business and personal documents	512K Mac ($80)
Greeting Card Maker	Activision (415) 960-0410	cards, invitations, announcements	64K Apple ($40); C 64/128 ($35)
LabelMaster Elite	Migraph (206) 838-4677	disk labels, index cards, mailing labels, mailing list manager, *Printmaster*-compatible graphics editor	Atari ST ($45)
MacBillboard	CE Software (515) 224-1995	giant posters, cards, banners, signs, iron-on transfers	512K Mac ($35)
Minipix disks	Beagle Bros (619) 296-6400	cards, banners, signs	48K Apple ($30); IBM PC & compatibles ($35)
PartyWare	Hi-Tech Expressions (305) 854-2318	invitations, animated cards, party decorations	64K Apple, Atari, C 64/128, 256K IBM PC & compatibles ($15)
Prince	Baudville (616) 957-3036	stickers, stationery, labels, announcements, cards, iron-ons, banners	64K Apple (craft kit and software, $50); (package and colored ribbon, $65)
The Print Shop	Broderbund (415) 479-1185	cards, signs, letterheads, banners	64K Apple ($50); Atari, C 64/128 ($45); 512K Mac, 128K IBM PC & compatibles ($60)
The Print Shop Companion	Broderbund (415) 479-1185	adds fonts, borders, functions and graphics to *The Print Shop*	64K Apple ($40); Atari ($35); C 64/128 ($35); IBM PC & compatibles ($50)
The Print Shop Graphics Library	Broderbund (415) 479-1185	clip art for *The Print Shop*	4 versions for Apple ($25 each); 3 for Atari ($25 each); 4 for C 64/128 ($25 each); 3 for IBM PC & compatibles ($35 each)
The Printing Press	Channelmark Corp. (415) 345-5900	posters, cards, letterheads, borders	256K IBM PC/XT/AT & compatibles, PC*jr* ($50)
Printmaster Plus	Unison World (415) 848-6670	calendars, cards, stationery, banners, signs	Apple ($40); Amiga ($50); Atari ST ($40); C 64/128 ($35); IBM PC & compatibles ($60)
Sign Designer	Channelmark Corp. (415) 345-5900	banners, signs	48K Apple II ($60); 128K IBM PC/XT/AT & compatibles, PC*jr* ($60)
Silicon Press	Silicon Beach Software (619) 695-6956	mailing labels, envelopes, stickers, cards, signs, invitations	512K Mac ($80)
Walt Disney Card & Party Shop	Bantam Software (212) 765-6500	stationery, cards, name tags, place mats, wrapping paper, banners	64K Apple ($40)

* Refer to text for explanation of categories

Apple and IBM versions, you can also print in color.) Consequently, you often have to print out several patterns before finding one that suits you. *The Print Shop Companion*, for use with the original program, adds new borders, fonts, and design possibilities, such as calendars and mirror-image creations.

Since new pictures are always welcome, several *Graphics Library* disks are available. In addition, other publishers, like Springboard and Epyx, have created disks full of *The Print Shop* artwork. If you join *The Print Shop* Users' Club (Apple II users only; Box 216, Mercer Island, WA 98040), you can buy an inexpensive utilities disk and use it to create mailing labels, envelopes, and bookmarks.

Because of *The Print Shop*'s popularity, other publishers have produced similar programs—some of which surpass the original's capabilities. With *Printmaster Plus* (Unison World), for example, you can preview at any stage of design—before you print calendars, cards, stationery, and banners. You can save your designs on disk for future use. Additional graphics disks, *Art Gallery I* and *II*, supply more than 140 graphics apiece.

Prince (Baudville) is a general-purpose printout program with a twist. The software can reverse an image; you can use a color printer to create multicolor, iron-on transfers for T-shirts. You can even use a printer that prints only in one color; *Prince* will indicate when it's time to change ribbons.

SPECIALIZED PROGRAMS

With the general-purpose programs, you can produce a wide variety of printouts. But if you want to focus on a particular kind of printout, specialized software makes it easier. *(See the Home Office department in this issue for a description of high-powered software that works with laser printers.)*

Greeting Cards. For example, with *PartyWare* (Hi-Tech Expressions), my teenage daughter, Debbie, created invitations for a theme party. Since she likes horror books and movies, the party was a *ghastly* event. Using only the supplied graphics, she created invitations (FOR GHOULS ONLY!), decorations, and thank-you notes.

Debbie's computer-generated party goods were so successful that she's starting a party-preparation business. Her first customer, eight-year-old cousin Lori, wants a Winnie-the-Pooh theme for her next birthday party. Debbie chose *Walt Disney Card and Party Shop* (Bantam) to create the favors for this event.

Awards and Certificates. The coordinator of a dropout prevention program at a New York City high school now designs monthly awards for students with regular school attendance. He selects the winners from his data base and uses *Certificate Maker* (Springboard) to print their awards.

Award Maker Plus (Baudville) offers 286 ready-made formats, and gives you the tools to create your own. While other certificate programs have limited graphics, this program allows you to import your favorite graphics from *The Print Shop* and use them as borders.

Comics. Designing cartoons is a specialized art form that few have mastered—until cartoon software came along, that is. *Walt Disney Comic Strip Maker* (Bantam) offers comics you can customize. You add frames to existing strips, change text, and alter the story line. In addition, you can create comic strips using Disney characters: design backgrounds and objects, and then add your own text.

Create With Garfield (DLM) lets you take Jim Davis's loveable characters, arrange them on the screen, put words into the cartoon bubble, and print out the result. Our neighbor Jennifer created a Garfield comic book by printing her cartoons and stapling the pages together. Her father, a village trustee, designed a "clean-up" campaign poster with a smiling Garfield eyeing a garbage can.

The most impressive cartoon program, *Comic Works*, is actually a special cartoon template that works with *Graphic Works* (Mindscape). You can create single or multiple frames—the panels of the daily newspaper variety—or design a multipage professional comic book. The concept and artwork are by Mike Saenz, who wrote *Shatter*, the first computer-generated comic book.

T-Shirts. *T-Shirt Shop* (Spinnaker) is dedicated to printing reverse-image iron-on transfers that you can use to make your own stylish T-shirts.

Labels. You can use many data-base programs to produce mailing labels, or you can use a specialized label-making program. *Label-Master* (MiGraph) gives you graphic designs to use on the labels. The program also has the same searching and sorting features you'd find in a data-base program.

Business Forms. One of the most versatile printout programs is *Graphic Works* (Mindscape). This easy-to-use program provides templates for many business documents, such as invoices and restaurant menus. In addition, you can create posters up to 32 times larger than a standard page.

MOUSE MACHINES

Mouse-driven computers—such as the Macintosh, Amiga, and Atari ST—have outstanding graphics capabilities. This can be an advantage when designing a printout. First, software for these computers generally lets you see on-screen exactly what will appear on paper. Second, the mouse allows you to drag and nudge letters and click on art, so it's easier to produce professional-quality work. With software such as *Silicon Press* (Silicon Beach Software), print elements can be moved around and lined up perfectly, giving you much more control than, say, with *The Print Shop* on an Apple II.

MacBillboard (CE Software) allows you to create posters as large as 19 feet by 26 feet. The program prints out parts of the design on separate sheets of paper; you assemble the graphic by lining up the correct edges so that it looks like a real billboard. Store owners could use the program to create giant window posters to advertise sales.

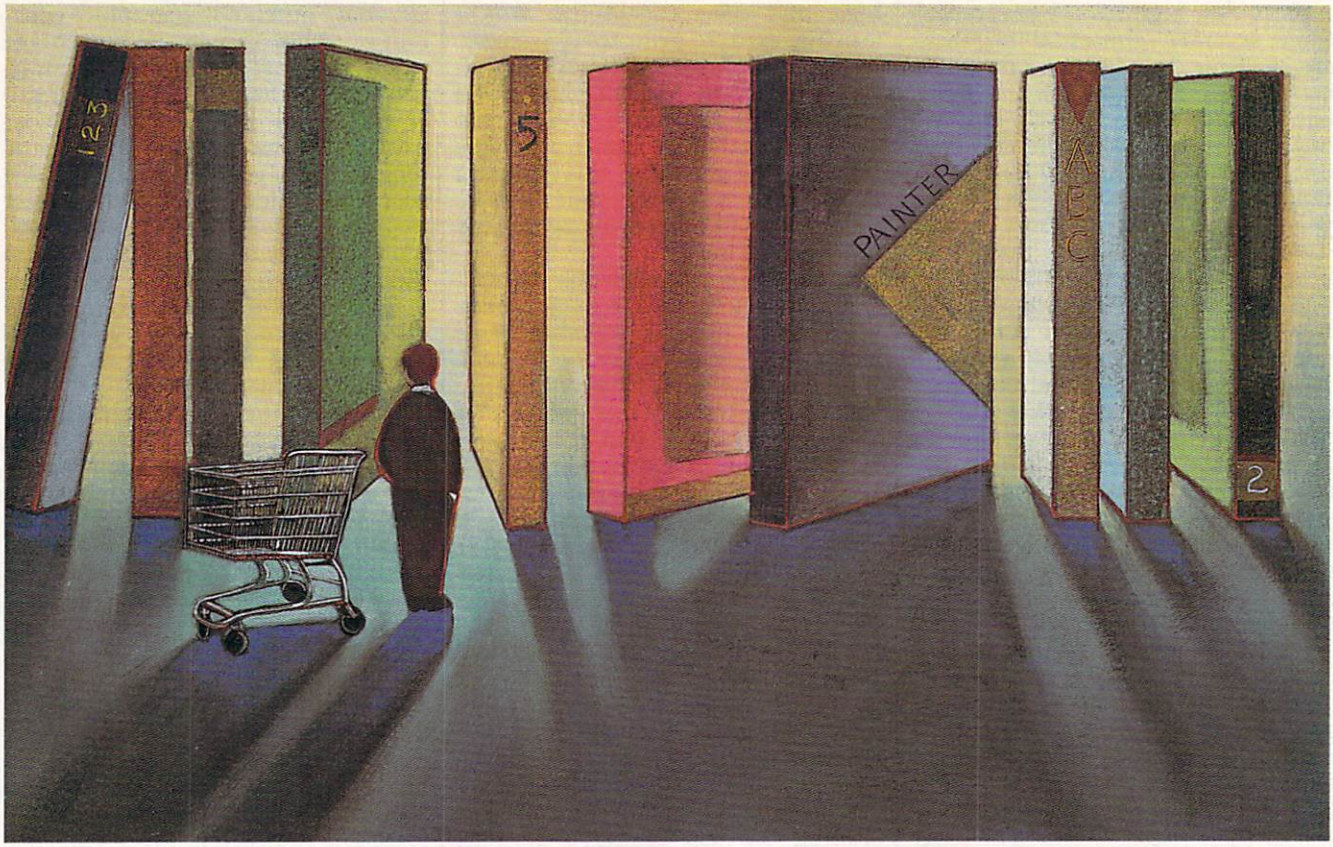
DESKTOP AND DATA-BASE SOFTWARE

In addition to the straightforward printout programs—those that don't require other software or hardware (besides a printer)—you can use more sophisticated desktop-publishing programs to achieve stunning effects. For instance, with *PageMaker*, you can load in digitized photographs, mix them with text from a word-processing program, and print an eye-catching poster. Similarly, you can create posters or cards by using a screen-dump program that allows you to print whatever appears on your computer screen.

If your computer or software can drive a laser printer, these documents may look even better. Printout software is a powerful utility, but the final output can be hampered by the quality of your dot-matrix printer. You can also dress up your work with special paper: parchment for awards or bright colors and pastels for fliers and stationery, for example.

Most people have vivid imaginations and wild ideas—but a hard time putting them into words or onto paper. Today's printout programs should be tools to inspire you—to plan a party, run for office, sell a widget— and get your ideas on paper. FC

Shopping for Software



SENSIBLE STEPS TO FINDING WHAT'S RIGHT FOR YOU

BY ABIGAIL REIFSNYDER

Whether you're a software zealot or you're buying a program for the first time, you know that shopping for software can take a big bite out of your budget. Unless you have a limitless disposable income, you have to be particular about your purchases. You have to decide whether the $70 word processor is really better than the one for $49. And if you shop around, can you find the $60 graphics program for $40? What if you get the program home, and it doesn't do what you want it to do? What if you discover that you've wasted your money?

Careful shopping takes time and energy, but it's almost always worth the effort. Anyone who's ever brought home a data base that holds only a handful of records or an educational game that's more boring than a workbook can tell you that. So what does shopping for software entail? The tales of many FAMILY COMPUTING readers helped us come up with basic steps to help you find the software that's right for you and your family.

BEFORE YOU GO SHOPPING . . .

Know what you need. "Never shop *in* the store," says Mark Johnson of New Windsor, New York. Knowing that you want a word processor isn't enough. Ask yourself what kinds of things you'll be writing: letters, short articles, newsletters, or long manuscripts. Maybe you want a graphics program. Is it for doodling or for making business charts? Do you want to be able to print your graphics? In black and white? In color? Do you want libraries of art? Questions like these help narrow down the choices as you become aware of the features most important to you.

Read software reviews. Stephanie Roberts, a graduate student and mother of three, explains: "It's important to read reviews before you go to the store because some software has pretty snazzy packaging that doesn't really tell you what's inside."

Most buyers find that reading reviews in more than one magazine is a good idea, since it enables them to cover more programs and get different perspectives. Which brings us to an important point: Just as the movie-review team Gene Siskel (of *The Chicago Tribune*) and Roger Ebert (of the *Chicago Sun-Times*) often disagree, software reviewers have differing opinions. As a software reviewer,

ABIGAIL REIFSNYDER *wrote "Computer Conversations" in the November 1986 issue.*

ILLUSTRATION BY DEBRA WHITE

I can assure you that if I sat down at the computer with another software reviewer, we might come to completely different conclusions about the program at hand. Ease of use may be the priority for one reviewer, while the number of options may interest another. What you should concentrate on is the actual description of features you need.

Look at advertisements. The Willetts family of Sylvania, Ohio, always checks magazine ads to find out about new programs. They don't believe everything they read in advertisements and stress that follow-up work is important (trying out the programs in the store, for example).

Let's say you're looking for a data base to help you keep track of clients for your home-based business. A look at some magazine ads may uncover unfamiliar programs. When John Bailin of New York City and a coworker were buying a word processor and found magazine ads for programs they'd never heard of before, they called the software companies directly to check on the features of programs they were considering.

Talk to other computer users. Word-of-mouth is one of the most helpful and accurate gauges of a program's usefulness. Lotus *1-2-3* may be a best-selling program, but you should talk to a neighbor who has it and find out if it really serves his or her needs. Of course, not everyone knows a lot of computer owners, so talking to people may not be as easy as it sounds. Users' groups may be good places to find people who know about programs for your computer. Good users' groups will keep you up-to-date on new releases and put you in touch with people who have programs of interest to you. Your computer's manufacturer or a local computer store may know of a users' group in your area.

WHEN YOU GO SHOPPING . . .

Go to more than one store. If you've already found a dealer you trust, this isn't so important. Kent Willetts buys most of his software at one store because he's found the people there to be reliable and informed. But June Holbrook, an accountant, says she shops around for prices, "and I tell them I'm shopping around." Giving herself time to go to more than one store allows her to get the most for her money and to hear more than one dealer's perspective on a program.

Be open-minded. Yes, you should know what you want before you go shopping, but don't be inflexible. At the store, you may find a program that you've never heard of before, and maybe that program is better suited to your needs than the one that you were planning to buy.

Be cautious. It's not that software salespeople are sneaky or disreputable—they rarely are. But sometimes they speak with a tone of authority without really knowing what they're talking about. On several occasions, I've been given incorrect information about programs I knew about or overheard dealers telling other customers things I knew were misleading, if not wrong. A couple of times, when I stepped in to correct them, the dealers were obviously grateful to hear from someone who knew the program.

If a retailer says you need "this exciting new feature," wait and think about it. It may be a frill you don't need (Do you really need a special option that tells you exactly how many words are in your document?), or it may be the feature that makes the program worth the extra $10 to you.

Find a store geared to your taste. Composer Bailin, for example, doesn't even go to computer stores to look for music software; he goes to music stores, where, he finds, they have a more complete selection of programs. "A lot of music software needs a synthesizer," he explains, "which is why most regular stores can't demo it." On the other hand, Kent Willetts's favorite store doesn't have the widest selection, but he doesn't mind. "They don't carry software—even best-selling software—if they don't like it," he says. As a result, he feels comfortable with the selection they do carry.

Ask for a demonstration. "Make sure you've seen what you're going to buy," advises Willetts, "because there are a lot of things out there that aren't what they're supposed to be." Bailin agrees: "Get a demo and try to use it yourself to see if you really like it. You don't actually know what you have until you use it."

However, this isn't always possible—particularly if you shop at a discount store. Some software dealers don't like to demonstrate a program if it means taking the cellophane off of the package.

Gerard Morneau, of Nashua, New Hampshire, believes demonstrations are the key to making software buying decisions. He won't buy software at discount houses because he wants to be able to see the programs and talk to people who really know what the programs are capable of doing.

Some people will go to a computer store to get a demonstration of a program, and then buy it at a discount store. This poses an ethical problem: Without our business, the stores that take the time to demonstrate programs would be forced out of business, and they're hard enough to find as it is.

BEFORE YOU BUY . . .

Check memory/peripheral requirements. Be wary of programs that require you to change or expand your system. There may be a program that does what you need without such a change; more isn't always better.

Examine the packaging. When the salesperson hands you the program, look over the packaging. Be sure the box is in good condition and that it hasn't been tampered with.

Check the specifications listed on the box. On what machine does the program run? Does your computer have enough memory? Are additional peripherals required? Read the features that the software publisher has included on the box. You may discover that the salesperson was wrong about something.

Look for a reputable publisher. The software publisher should still be in business so you can call if you have problems with the program. For most of us, support is an important issue. Holbrook bought an amortization program that didn't print, but because the publisher was still around, she was able to write to it and explain the problem. The company sent her a new copy of the program.

Insist on a good return policy. You should be able to return the program in case it doesn't work right or at all. This is another reason why Morneau won't buy at discount stores that won't take back faulty merchandise.

One time, Kent Willetts, an Apple IIc owner, saw a program being demonstrated on a IIe that was supposed to work on the IIc as well, according to the package. When he got it home, he discovered otherwise: One whole section wouldn't work on the IIc. Because his store takes returns, he was able to exchange it for another program.

If all this sounds like a lot of work, that's because it is. Especially in the beginning, shopping for software *should* be hard work. But, as with most things, the more you do it, the better you'll get and the easier it will become. If you find yourself increasingly satisfied with the software you buy, that could mean better grades for your children, more fun playing games, or higher profits in less time for your business. FC

PARENTS! TEACHERS! KIDS!

BE A WINNER IN OCTOBER.

Join Computer Learning Month

WHY A COMPUTER LEARNING MONTH?

Learning with computers is giving America's youth the winning edge. Never before has there been such an exciting event devoted exclusively to bringing parents, teachers and kids together for a month-long celebration of learning with software and computers. It's called Computer Learning Month, and it's happening this October. Computer Learning Month is so important that a commemorative bill has been introduced into both Houses of Congress declaring October 1987 as Computer Learning Month. Sponsored by major educational software and computer companies and supported by national educational organizations and State Departments of Education, Computer Learning Month will be an event in which everyone will be a winner – an event you won't want to miss.

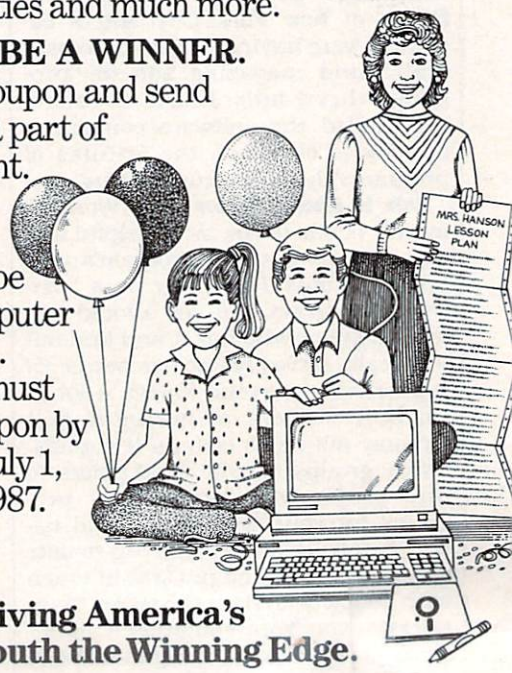
EVERYONE WILL BE A WINNER... Contests! Contests! Contests! Thousands of dollars worth of great prizes will be given away in October. Essay and art contests for families and kids. Lesson plan contests for teachers. And if you are a prize winner, your school will be a prize winner, too.

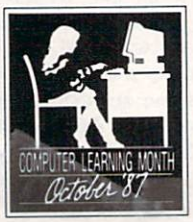
Exciting programs for families. Now parents can learn how to help their children benefit from using a computer, whether they own one or not. We're giving away a free booklet designed just for parents. There will be fairs and special events sponsored by local retailers. And we know schools will be hosting special parent nights.

A month full of activities for teachers. Teachers can join in the celebration easily and learn new ways to help their students benefit from using computers. Every teacher can receive a celebration poster, chock-full of lesson plan ideas, activities and much more.

IT'S EASY TO BE A WINNER.

Just clip this coupon and send it in today to be a part of this national event. We'll send you everything you need so you can be a winner in Computer Learning Month. Don't delay. We must receive your coupon by July 1, 1987.





Giving America's Youth the Winning Edge.

YES! I WANT TO BE A WINNER IN OCTOBER!

☐ Please send me contest rules.

☐ Please add my name to the Computer Learning Month Mailing List.

I am a ☐ teacher ☐ parent ☐ student

I own a computer ☐ yes _____ ☐ no
(type of computer)

NAME _____

SCHOOL _____

ADDRESS _____

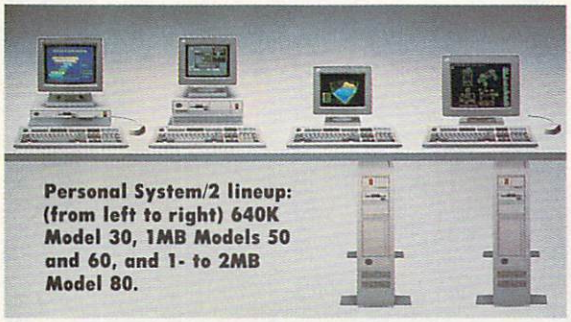
CITY _____ STATE _____ ZIP _____

PHONE _____

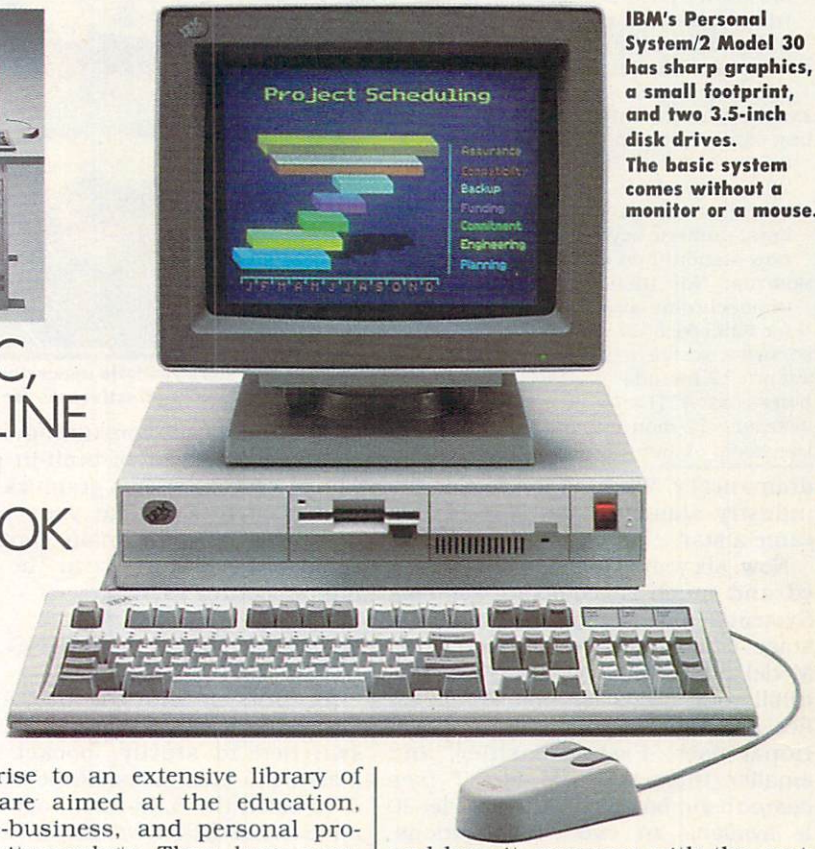
Mail Coupon to: Computer Learning Month
P.O. Box 19763
Washington, D.C. 20036-0763
(202) 452-1600

Computer Learning Month 1987 is Sponsored by: Software Publishers Association, Advanced Ideas, Britannica Software (Publishers of DesignWare,® EduWare,® Blue Chip Software,™) Broderbund Software,™ Davidson and Associates, Inc., The Learning Company, Mindscape, Inc., Random House Media, Scholastic, Inc., Spinnaker Software, Springboard Software, Inc., Weekly Reader Family Software.

THE IBM PERSONAL SYSTEM/2



Personal System/2 lineup: (from left to right) 640K Model 30, 1MB Models 50 and 60, and 1- to 2MB Model 80.



IBM's Personal System/2 Model 30 has sharp graphics, a small footprint, and two 3.5-inch disk drives. The basic system comes without a monitor or a mouse.

MOVING PAST THE PC, IBM BRINGS A NEW LINE OF COMPUTERS TO MARKET. HERE'S A LOOK BEYOND THE FUSS.

BY BERNADETTE GREY

"This is the year of the customer," an IBM spokesperson announced at a press conference to introduce the company's new line of computers, the Personal System/2. Although the name keeps the "personal" (but drops the "computer"), only one of Big Blue's four new models is likely to be talking to consumers. You'll have to decide if America's computer giant has reassured *you* that it's looking out for your investment in its technology.

While it's clear that IBM plans to leave the $1,000-and-under market and price war to others, these new machines offer an array of features to individuals and small-volume entrepreneurs as well as to giant and mid-sized corporations and schools. The assurance that most existing MS-DOS software will work on the more powerful machines is important news for people who work in or run an IBM-stocked office.

The Model 30, with a list price of $1,695, could—with its accelerated speed and vastly improved graphics—give rise to an extensive library of software aimed at the education, home-business, and personal productivity markets. Then, large numbers of consumers and educators might start buying Model 30s instead of Apple's IIs (today's school leader) and Macintoshes or PC clones.

The Personal System/2 could thereby eliminate many "either/or" decisions. Gone would be such choices as work versus play and office versus school compatibility. Parents who want to run a home-based business or bring work home from the office *and* provide computer-based learning for their children would find software to meet their needs and the color required for most educational programs and entertainment packages. This means a lot of users would feel they *could* have it all.

While the old cliche "You won't get fired for buying IBM" may not be true 100 percent of the time, it's certainly less likely that you'll lose your job or squander your money on an orphan if you go with IBM.

Read on to learn what "going with IBM" is likely to mean in the future and how it compares with the past. Before claiming success, IBM must get you to its dealers. That already makes the company right about at least one thing: This is your year—the year of the customer.

THE MODEL 30: STARRING IN YOUR HOME AND HOME OFFICE

In 1981, when IBM first unveiled its Personal Computer, very few people considered buying them for use in their homes. The company itself predicted total lifetime sales of under 250,000 units. Even the most visionary computer-industry gurus didn't see the future success of IBM's PC, with its original 16K of memory and $3,200 price tag.

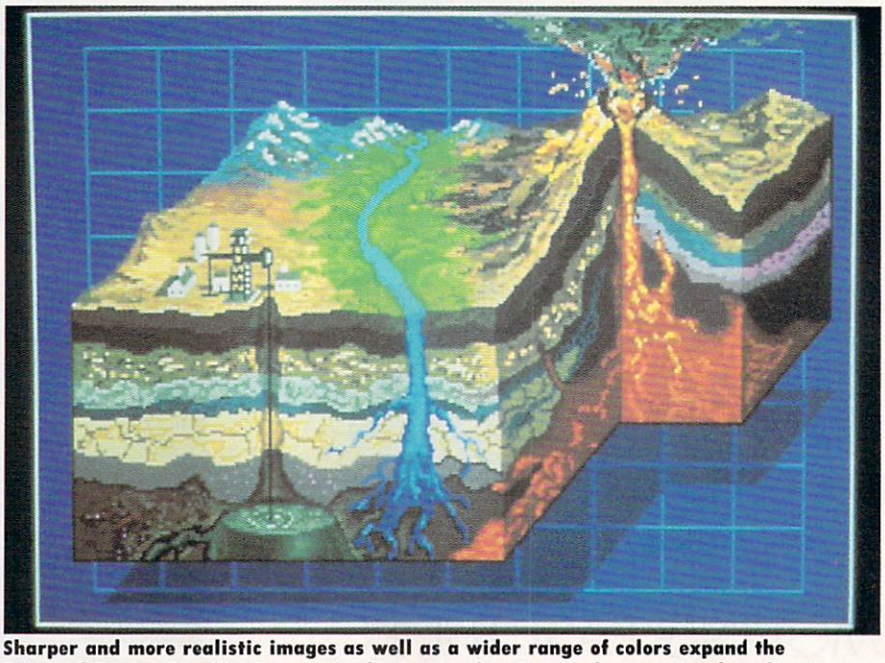
But software applications multiplied, attitudes towards high technology changed, and the price/performance ratio of computers improved

BERNADETTE GREY *is associate editor of* FAMILY COMPUTING.

EDITOR'S NOTE: *Look for a hands-on review of the Model 30 in an upcoming issue.*

A CLOSER LOOK AT THE MODEL 30

MICROPROCESSOR: Intel 8086
SPEED: Processes data at a clock speed of 8 MHz
MEMORY (RAM): 640K
OPERATING SYSTEM: IBM PC DOS 3.3 (not included: $120)
COLOR & GRAPHICS CAPABILITIES: Up to 256 colors (or 64 shades of gray) at one time from a palette of over 256,000 colors at 320 x 200 resolution
BUILT-IN PORTS: Serial, parallel, analog RGB, pointing device (e.g., mouse)
EXPANSION SLOTS: Three
DISK DRIVE: Two configurations: two 720K 3.5-inch or one 720K 3.5-inch and one 20MB fixed drive
KEYBOARD: 101 keys, including 12 function keys, numeric keypad. (This keyboard is now standard on all IBM machines.)
MONITOR: Not included in basic unit. (monochrome available for $250; color for $595-$1,550)
SOFTWARE INCLUDED: Start-up disk
WEIGHT: 17 pounds
DIMENSIONS: 4" H x 16" W x 15.6" D
WARRANTY: 12-month limited warranty
LIST PRICE: $1,695-$2,295



Sharper and more realistic images as well as a wider range of colors expand the Personal System/2's effectiveness for business, education, and recreational applications.

dramatically. Winning the role as the industry standard, the IBM PC became a star.

Now, six years later, the long-awaited and much-talked-about Personal System/2 line is fighting for center stage. Of the four new computers, the Model 30 is the one most likely to fulfill your needs for home/home-office use and for your child's educational uses. Faster, flashier, and smaller than the IBM PC/XT (*see comparison box below*), the Model 30 is available in two configurations: with two 720K 3.5-inch disk drives for $1,695 or with one 720K 3.5-inch disk drive and one 20MB fixed drive for $2,295. (Add to these basic configurations the required DOS 3.3 [$120] and a monitor [$250 for monochrome; $595 for lowest-priced color].)

The Model 30 comes with 640K of RAM and has a smaller footprint than the PC, partially because IBM removed five space-consuming expansion slots in favor of built-in ports. The machine also has graphics capabilities that will take your breath away; it's now the main contender against the Macintosh in the desktop-publishing arena.

HOUSE LIGHTS DIMMING ON 5.25-INCH DISKS?

Also in sync with the Mac, Amiga, and Atari ST styles, IBM has switched to sturdy, pocket-sized, plastic 3.5-inch disks. While IBM has deep-sixed the 5.25-inch floppy with an external disk drive, the entire Personal System/2 line will run most 5.25-inch IBM PC software. This is good news for current PC owners who later might want to upgrade to the Personal System/2. IBM can't and won't ignore the huge base of IBM PCs and compatibles. They have already announced several options to let PC owners exchange data back and forth between the two families of machines.

Moving up to 3.5-inch drives should be an easy process for most publishers. Some, including Software Publishing Corp., Borland International, and Ashton-Tate, have already made their MS-DOS programs available in both 3.5- and 5.25-inch versions. However, down the road, despite compatibility, IBM PC and clone owners may long for the newer technology when they come across new Model 30 programs with knockout graphics that won't run on their older machines.

COLOR AT NO EXTRA COST

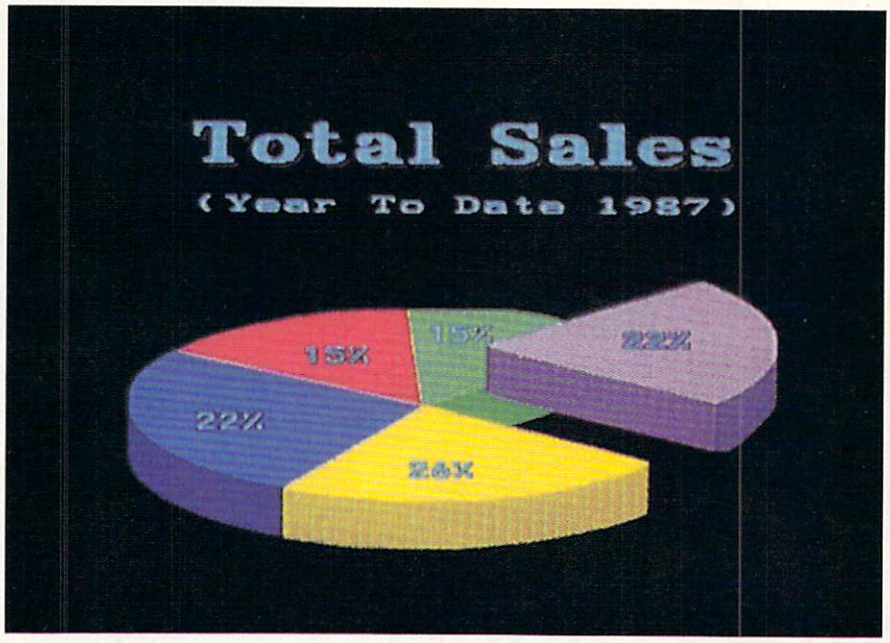
Software designers who create new packages for the Model 30 are sure to take advantage of the machine's built-in visual capabilities—particularly the ability to display up to 256 colors at one time. Most who've seen the machine were impressed with the clearness and sharpness of text and graphics. Some of the digitized images that we've seen are amazingly lifelike.

Even if you purchase a monochrome monitor for the Model 30, you'll be able to use color software. The monochrome monitor for the new machine will show color as 64 shades of gray. On the downside, if you already own a PC-compatible monochrome or color monitor, it won't work with the Model 30. You must buy one of IBM's newly introduced displays, at least for now.

Now that IBM has pushed the graphics capabilities of its Model 30 up to Mac-level, the Mac has a formidable opponent on the desktop-publishing court. IBM is trying to woo

THE DRAMATIC DIFFERENCE

	IBM PC/XT Model 278	IBM Model 30
List price	$1,545	$1,695
Microprocessor	8088	8086
Clock speed (MHz)	4.77	8.0
Memory (RAM)	256K	640K
Display	None	Built-in enhanced color and graphics. Up to 256 colors displayed at once.
Built-in-ports	None	Serial, parallel, analog RGB, pointing device (e.g., mouse)
Clock/calendar	None	Built-in; battery powered
Dimensions	5.5" H x 19.6" W x 16.1" D	4" H x 16" W x 15.6" D
Disk drives	Two 360K 5.25-inch	Two 720K 3.5-inch
Warranty	90 days	One year



away some Mac fans by offering the 30 as part of a $8,553 hardware/software desktop-publishing package. Called SolutionPac Personal Publishing System, the highlights of the package are a Model 30 with a hard-disk drive and a monochrome monitor, IBM's new Personal Pageprinter laser printer, *PageMaker* from Aldus Corporation, Microsoft's *Windows*, and IBM PC DOS 3.3.

IS IT CURTAINS FOR CLONES?

And what's next for the drove of Asian and U.S. clones whose makers have made their fortunes beating IBM's prices and making the PC more affordable? With its personal-computer makeover, has IBM thwarted competitors from making copycats as many had feared? It doesn't look that way.

For now, there's bound to be some turmoil. Several Personal System/2 features are difficult to clone. Yet, competitors indicate that the machine can, indeed, be copied; some are saying it's just a matter of months. And priced at more than $2,000 when a monitor and DOS 3.3 are included, the Model 30 can surely be undercut by clones.

A FAMILY ACT

While for home-office or family use you might be interested mainly in the Model 30, you should look at the whole line of Personal System/2 products—aimed at larger corporate customers. With features that promise easy linkups to mainframe computers, the new IBM family could very well be a hit with the Fortune 500. IBM's three other new computers, the Models 50, 60, and 80, will be able to take advantage of a new, but as-of-yet-unreleased, operating system called Operating System/2. The Model 50, a 1MB machine (expandable to seven), has a 20MB hard-disk drive and carries a list price of $3,595, while the 1MB Model 60, which can be expanded to 15MB, has a 44MB hard-disk drive and sells for $5,295-$6,295. And the Model 80, with 1- or 2MB of standard memory (expandable to 16MB), will sell for $6,995-$10,995.

At the same time, IBM is cutting prices on its older models, most of which are no longer being manufactured. Even the list price of the frequently cloned PC/XT Model 278—which will still be manufactured—has dropped from $2,295 to $1,545. In turn, some PC-compatible manufacturers who stick with the market will have to slash their prices. That's good news for people who decide they still want an IBM PC or compatible.

THE SUPPORTING CAST

Big Blue has also introduced an entourage of software and hardware products to support its new system, including assorted printers and musical and speech-synthesizer cards.

Five new printers are compatible with the Personal System/2 and the older personal computer line: three models of the IBM Proprinter, a faster Quietwriter printer, and a laser printer (connects only to the Personal System/2). The $549 IBM Proprinter II is a dot-matrix printer with a near-letter-quality switch. The IBM Proprinter X24 ($799) and XL24 ($1,049), with 24-pin printheads, include a letter-quality switch, a quiet-mode switch, and a pitch-font selection switch. The IBM Quietwriter III ($1,699) is a fast and quiet non-impact, thermal-transfer printer that prints in letter quality. And the Personal Pageprinter ($2,199) is a laser printer that produces very high-quality text and graphics suitable for desktop publishing.

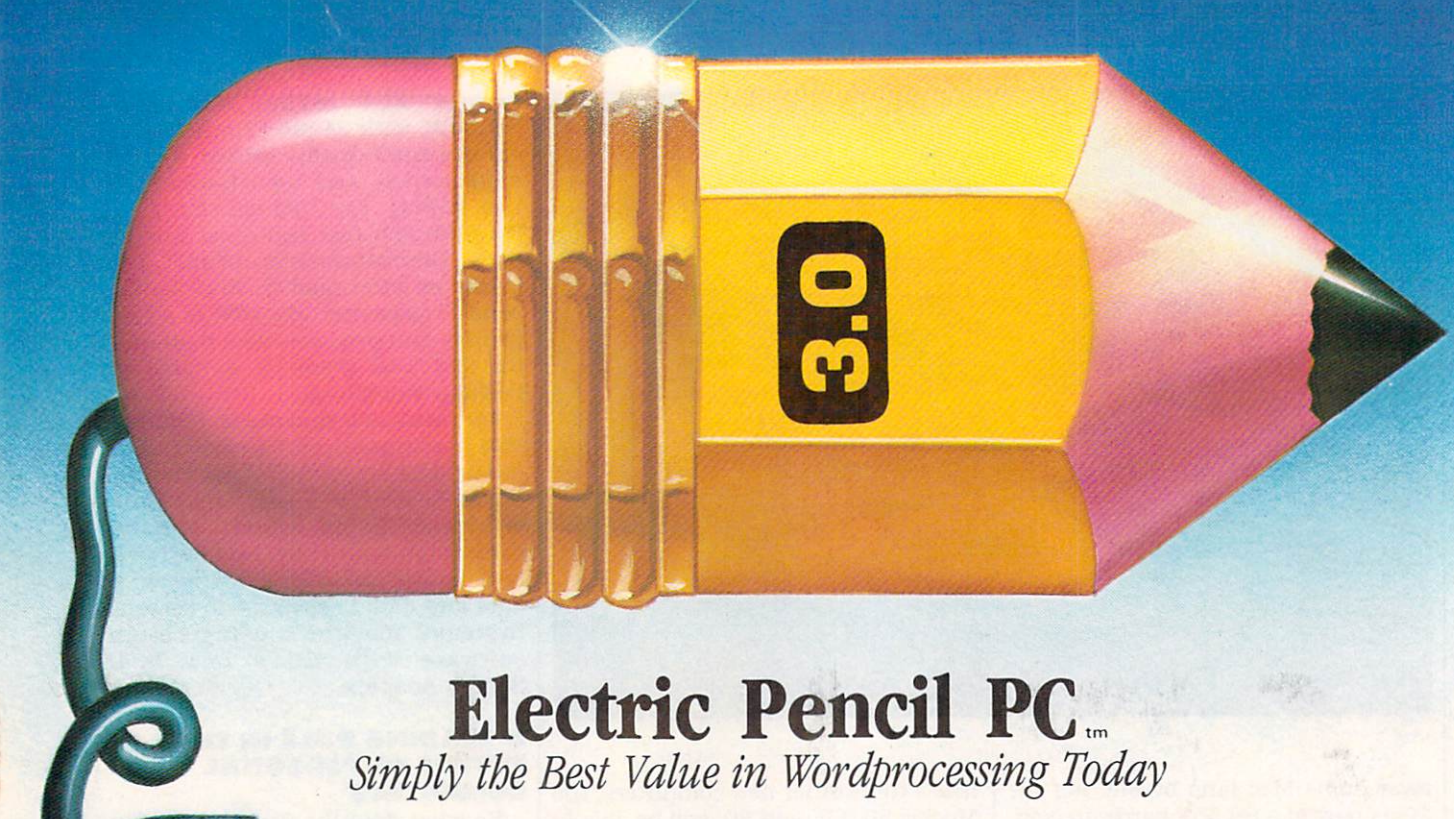
For musicians and music students, IBM has introduced its own optional music adapter card ($495). The IBM Music Feature lets users play up to eight sounds (16 sounds with two cards) simultaneously. And users can add voice capabilities—speech to data and data to speech—to Personal System/2 machines using certain software with IBM's new $345 Speech Adapter.

A LEADING ROLE IN THE FUTURE OF PERSONAL COMPUTING

So what does the Personal System/2 mean for the future of the computer industry? Big Blue is known for letting others dip their little toes into untested waters and then claiming those waters once they've been proven to be safe. The introduction of the Personal System/2 demonstrates this defensive plan of attack.

IBM has turned toward powerful graphics, 3.5-inch disk drives, a smaller footprint, and a mouse port—features previously included by companies such as Commodore, Apple, or Atari. (The Amiga, Macintosh, and ST include a mouse in the base configuration; the mouse for the Personal System/2, however, is optional [$95].) That IBM, the industry leader, has acknowledged the importance of these state-of-the-art features means that the whole industry is taking a step forward.

While no one can do more than guess at the future success of IBM's personal-computer makeover, it's likely to have an evolutionary effect on how people use the personal computer. When technologically impressive (although expensive) products like the Personal System/2 are brought to market by the cautious giant, it means a change for the entire industry. We have to agree with William Lowe, IBM's Vice President and President of the Entry Systems Division, who said at the announcement: "IBM has introduced not just a new addition to the IBM family of products, but a whole new platform on which to build the future of personal computing." FC



Electric Pencil PC™

Simply the Best Value in Wordprocessing Today

With as many features as wordprocessors selling for 10 times the price, Electric Pencil PC was designed to be sophisticated enough for the professional user yet simple enough for the beginner. Our "Quick Start Guide" will have you writing, editing, and printing in less than 20 minutes. Once you have the basics, any of 500 functions are available with a simple key-stroke. The on-screen help and extensive tutorial windows are like having a manual on disk.

There may be only two methods left for writing: a no. 2 pencil or the power of Electric Pencil PC. You'll be impressed with this full-featured wordprocessing system at a revolutionary price . . . we guarantee it!

• Supports DOS 2.0 (or higher) directory structure • On screen underlining & bold with monochrome (colors on color monitor) • Set screen, text, underlined, bold & marker colors • All prompts in English (no codes or numbers) • Recover last delete from cut and paste buffer • Built in disk file recovery • Definable function keys • All "wordprocessing keys" are used • Designed especially for the IBM PC & compatibles • Definable screen width • Embedded printer control commands • Automatic character translation • Repeat function • Chain disk files when printing • Append files in memory • Include files from disk within text • Verify option with load & exit • Centering • Conditional paging and page numbering • Remark command in text • Print any part of text or range of pages • Over 80 individual on line help windows • DOS or expanded keyboard buffer • Toggle between main/alternate text files • optional ASCII file save/load • Parallel & serial drivers (RS-232) • "Pause" command in text • Single word spell check • Customize dictionary • Auto-learn & correct misspellings • Build "specific" dictionaries • Auto hyphenation, user defined • Dvorak, French, German & Spanish keyboard drivers • Automatic file backup • Runs on floppy or hard disk • Keyboard macros • Automatic key entry files • Simple 1 or 2 key command structure • Multiple search & replace functions • User timed auto-file save • 270 page 2 color manual • Split screens (up to 6) • Right justification • • 3½ in. disk available •

- ☑ PRINT PREVIEW TO SCREEN
- ☑ FULLY MENU DRIVEN
- ☑ 100,000 WORD DICTIONARY
- ☑ EXTENSIVE ON SCREEN TUTORIAL WINDOWS
- ☑ NOT COPY PROTECTED
- ☑ WORKS WITH ANY PRINTER
- ☑ MULTI-LINE HEADERS & FOOTERS
- ☑ RE-DEFINE ENTIRE KEYBOARD

WINNER OF THE GOLD MEDAL & PROGRAM OF THE YEAR AWARD, CREATIVE COMPUTING MAGAZINE

MONEY BACK GUARANTEE

Electric Pencil PC is unconditionally guaranteed for 30 days (less shipping). There is a $10.00 restocking fee if the disk envelope seal is broken.

For Texas Orders or Additional Information Call (214) 234-8466. Mail in your order today or, for immediate shipment,

CALL TOLL FREE

1-800-445-9004

SPECIAL OFFER

$49.95

*Please Add $5.00 for Shipping and Handling

25,000 Word Medical Dictionary Optional $19.95

COD's welcome. Please add an additional $3.00 COD fee. On all foreign orders, shipping cost is assumed by the buyer.

DEALER INQUIRIES WELCOME

MasterCard · American Express Card · VISA

ELECTRIC SOFTWARE CORPORATION

9230 MARKVILLE DR. DALLAS, TEXAS 75243

MINIMUM HARDWARE REQUIREMENTS:
IBM-PC/XT/AT or compatibles and Tandy 1000/1200, 128K memory, one disk drive, PC-DOS, MS-DOS 2.0 or higher. Color or monochrome monitor.

MS-DOS is a trademark of MicroSoft Corp. IBM and PC-DOS 2.0 are registered trademarks of International Business Machine Corp. Tandy is a registered trademark of The Tandy Corp. Electric Pencil PC, Pencil Tutor and PC Proofreader are registered trademarks of Electric Software Corp.

SOFTWARE GUIDE

Welcome to FAMILY COMPUTING's Software Guide, the most comprehensive listing available of two dozen of the newest, most noteworthy, and/or best programs on the market. Our reviewers include families from all over the country who have judged the software according to the following criteria: long-term benefits and applications, adaptability, and advantages of using a computer for a given task. Programs have been evaluated and rated for their performance in each of the categories listed below. More detailed reviews follow the chart. Unless otherwise noted, all programs are in disk format, and minimum memory requirements are 48K for Apple II series, 48K for Atari, 128K for IBM PC/PC*jr* or compatibles, and 128K for Macintosh. "Atari" alone denotes the 800/XL/XE series. "C 64/128" means the software will run on both a C 64 and a C 128 computer in C-64 mode; "C 128" alone means the software will run only on that machine.

Here's a rundown of the rating categories and what they mean: **O** = Overall performance, given the limitations and capacities of the particular computer for which the software is intended. **D** = Documentation, or the instructions and literature that accompany a program. **EH** = Error-handling, the software's capacity to accommodate errors made by the user—an especially important consideration with software for younger users. **PS** = Play system (in the games reviews), the quality of the game design and the game's playability. **GQ** = Graphics quality, also evaluated in light of each particular brand's graphics capabilities. **EU** = Ease of use after the initial learning period, which varies from computer to computer. **V** = Value for money, or how the software measures up to its price.

EDUCATION/FUN LEARNING

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
LEARNING DOS Microsoft Corporation 16011 NE 36th Way Redmond, WA 98052 (206) 882-8080 $50 ©1986	From the folks who make it, an interactive, on-line tutorial that teaches the essential DOS operations one screen at a time; all you'll need for starting off with an MS-DOS computer.† —MORGENSTERN	256K IBM PC.*	90-day warranty. Not copy-protected.	★★★	★	★★	★★★	E	★★★
MATHTALK First Byte, Inc. 2845 Temple Ave. Long Beach, CA 90806 (213) 595-7006 $50 ©1986, 1987	Various game formats and the novelty of synthesized speech work together to keep kids interested as they do serious drill work that would otherwise be boring. Best for ages 5–12. —SUMMERS	Reviewed on 512K Amiga. Also for Apple IIGS, Atari ST, Macintosh. Printer optional.	6-month warranty. $10 for backup.	★★★	★★	★★★	★★	E	★★★
SCIENCE TOOLKIT MODULE 1: SPEED & MOTION Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1185 $40 ©1986	Expands the original *Master Module* with photocells and experiments on speed and motion. As in real scientific procedures, you must be precise and spend quite a bit of time with each experiment to get worthwhile results. —SOLOMON	64K Apple. *Science Toolkit Master Module.* Printer optional.	90-day warranty. $7.50 thereafter.	★★★	★★★★	★★★	N/A	A	★★
TEXT TIGER MindPlay 82 Montvale Ave. Stoneham, MA 02180 (617) 438-5454 $40 ©1986	An introduction to keyboarding and word processing; especially geared to children, ages 7–10. Nothing special in any way, but it does what it's supposed to and is simple to use. —ZORNBERG	Apple.	Sold as is. $10 for backup. $5 for lifetime warranty.	★★	★	★★	★★	E	★★
VENTURE MAGAZINE'S BUSINESS SIMULATOR Reality Technologies 3624 Market St. Philadelphia, PA 19104 (215) 387-6055 $70 ©1986	A first-rate simulation of the financial decisions required to run a start-up company. It's as exciting as an adventure, but instead of learning spells, you master business strategies.† —MORGENSTERN	Reviewed on 256K IBM PC.* Planned for Apple IIGS, 512K Macintosh. 2nd drive. Color monitor recommended.	90-day warranty. Not copy-protected. 30-day money-back guarantee if bought from publisher.	★★★★	★★	★★	★★★	A	★★★

RATINGS KEY **O** Overall performance: **D** Documentation: **EH** Error-handling: **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: ○ Poor: ★ Average: ★★ Good: ★★★ Very Good: ★★★★ Excellent: N/A Not applicable: E Easy: A Average: D Difficult: † Longer review follows chart.

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

HOME BUSINESS & PRODUCTIVITY

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	EH	GQ	EU	V
ANIMATE Broderbund Software 17 Paul Drive San Rafael, CA 94903 (415) 479-1185 $70 ©1986	Create colorful animation sequences, put them to music, and write your own stories. The "toolkit" (filled with options) can overwhelm a novice designer, but with patience, you can get great results. —ELTGROTH	128K Apple IIe/IIc/IIGS. Mouse, joystick, KoalaPad. 2nd drive, color monitor recommended.	90-day warranty. $7.50 thereafter. $10 for backup.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★ ★	A	★ ★ ★
FLEET SYSTEM 4 Professional Software Inc. 51 Fremont St. Needham, MA 02194 (617) 444-5224 $80 ©1986	Combines a full-featured word processor (with dictionary and thesaurus) and a basic data base. Everything worked flawlessly, but the lengthy command sequences are cumbersome to use. —ZORNBERG	C 128. RGB or 80-column composite monitor. 2nd drive optional.	Sold as is. $15 for backup (no backup for data base).	★ ★	★	★ ★ ★ ★	N/A	D	★ ★
GRAPHICWRITER DataPak Software, Inc. 14011 Ventura Blvd., #507 Sherman Oaks, CA 91423 (818) 905-6419 $150 ©1986	The first word processor just for the IIGS is combined with a paint program, which lets you mix color and graphics in your documents. But it can be illogical to use (I lost files twice), and the manual lacks important details. —FRANK	512K Apple IIGS.	90-day warranty. Free backup (if warranty card is sent in).	★ ★	★	○	★ ★ ★ ★	A	★
MINDWRITE MindWork Software P.O. Box 222280 Carmel, CA 93922 (408) 625-2720 $125 ©1986	It's very easy to move back and forth between writing and outlining in this integrated productivity package. Families and professionals alike will want to seriously consider it.† —MORRIS	512K Macintosh. 2nd drive recommended.	90-day warranty. Not copy-protected. 30-day money-back guarantee.	★ ★ ★	★ ★ ★	★ ★ ★	N/A	A	★ ★ ★
NEWSMASTER Unison World 2150 Shattuck Ave. Berkeley, CA 94704 (415) 848-6670 $100 ©1986	An icon-based package for making attractive newsletters, bulletins, and fliers. While it doesn't have all the features of a true desktop-publishing system, it's useful for families and some businesses.† —RASKIN	256K IBM PC.* PC*jr*.* Graphics card, 2nd drive.	90-day warranty. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★	E	★ ★ ★
ONLINE! Micro-Systems Software 4301-18 Oak Circle Boca Raton, FL 33431 (305) 391-5033 (800) 327-8724 $70 ©1985, 1986	All the features you need in a communications program, such as several file-transfer protocols, a directory for favorite phone numbers, and automatic keystroke macros. Its weak link is its documentation. —SUMMERS	Reviewed on 512K Amiga. Planned for Atari ST.	30-day warranty. Not copy-protected.	★ ★ ★	★	★ ★	N/A	E	★ ★ ★
PAINTWORKS Activision 2350 Bayshore Parkway Mountain View, CA 94043 (415) 960-0410 $40 ©1986	A paint program with most of the standard features and a few impressive extras, such as color cycling, vertical and horizontal line fills, and a slide-show mode to screen your pictures. —BRADLEY	Atari ST. TOS in ROM.	90-day warranty. $7.50 thereafter.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★	E	★ ★ ★ ★
PHASAR Finally Software 4000 MacArthur Blvd, #3000 Newport Beach, CA 92663 (714) 722-2922 $100 ©1984, 1987	Home-finance software (double-entry accounting style) that helps you maintain a budget, write checks, balance accounts, and do taxes. It doesn't automatically warn you of all mistakes, however. —SUMMERS	Reviewed on 512K Amiga. Also for 512K IBM PC.* Printer.	Sold as is. Not copy-protected. 30-day money-back guarantee.	★ ★	★	★	N/A	A	★ ★
WRITE NOW Airus, Inc. 10200 SW Nimbus Ave., #65 Portland, OR 97223 (503) 620-7000 $150 ©1986, 1987	A word processor with a couple of twists: if it recognizes the word you're typing, it completes it for you; and it can check your spelling as you write. Best for letters and reports.† —SWEARENGIN	256K IBM PC.* Requires 384K for 35,000-word dictionary. 2nd drive recommended.	60-day warranty. Not copy-protected.	★ ★ ★	★ ★	★ ★	N/A	A	★ ★

RATINGS KEY **O** Overall performance; **D** Documentation; **EH** Error-handling; **GQ** Graphics quality; **EU** Ease of use; **V** Value for money; ○ Poor; ★ Average; ★★ Good; ★★★ Very Good; ★★★★ Excellent; N/A Not applicable; E Easy; A Average; D Difficult; † Longer review follows chart.

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

SILICON EXPRESS DISKS SS/DD 6.95 DS/DD 7.95

VERBATIM OR MAXELL SS/DD 13.95 DS/DD 16.95

ELEPHANT SS/DD 7.95 DS/DD 8.95

DATACASE 7.95

INSIDE OHIO 1-800-225-0755

YOUR TOLL FREE ACCESS OUTSIDE OHIO

1-800-228-0755

CALL...FOR THE BEST PRICES...
BEST DELIVERY...
We have hundreds of other programs in stock at Fantastic savings.

SILICON EXPRESS

LASER 128—APPLE COMPATIBLE COMPUTER $389.00

	IBM
Algeblaster	27.89
American Challenge	24.89
ASC II Express	74.89
Balance of Power	33.89
Bank Street Writer -	58.89
Breakers	28.89
Certificate Maker	41.89
Library Vol. 1	19.89
dBase III -	419.89
Dollars & Sense	104.89
Easy	88.89
Flight Sim	28.49
Fontrix	66.89
Fontasy	46.89
Fntpks 1 thru 13	ea. 13.89
Framework II	419.89
Fully Powered PC	24.89
Gamecard III	39.89
Gato	21.89
Hacker I or II	24.89
Hellcat Ace	24.89
Jet	31.49
King's Quest I or II	31.89
Load Runner	22.89
Locksmith	56.89
Lotus	319.89
Mean 18	34.89
Mngng Yr Money	114.89
Micro Cookbook	27.89
Microsoft Word	279.00
Multiplan	110.89
Newsroom Pro	74.89
Norton Utilities	58.89
Option Board	79.89
PC Tools	18.89
PFS: Access	59.89
PFS: Files Profes.	148.89
PFS: First Choice	104.89
PFS: Plan Profes.	148.89
PFS: Write Profes.	148.89
Print Shop	34.89
Print Shop Companion	32.89
Print Shop Gr. #1	21.89
Reflex Database	86.89
Report Card	32.89
Sidekick	50.89
Sideways Ver. #3	38.89
Silent Service	22.89
Speedkey	104.89
SuperCalc 4	279.89
Superkey	40.89
Symphony	494.89
Think Tank	99.89
Toy Shop	46.89
Traveling Sidekick	40.89
Turbo Database Tlbx	40.89
Turbo Lighting	58.89
Turbo Pascal 3.0	59.89
Turbo Prolog	58.89
Turbo Tutor	23.89
Ultima III	40.89
Visable 8088	47.89
Volkswriter Dlx #3	141.00
Web. Spell Checker	39.89
Wizardry	36.89
Word Perfect	289.00
Wordstar 2000 -	284.89

APPLE SOFTWARE

Adv. Construction	33.89
Airheart	22.89
Algeblaster	27.89
Alpha Plot	20.89
ASC II Express	74.89
Auto Works	25.89
Bag of Tricks 2	31.89
Bank Street Filer	42.89
Bank Street Mailer	42.89
Bank Street Writer	42.89
Bank Street Speller	42.89
Bard's Tale	39.89
Beagle Bag	16.89
Beagle Basic	18.89
Beagle Compiler	41.89
Beagle Graphics	30.89
Beneath Apple DOS	12.89
Big U	18.49
Bookends	66.89
Bop & Wrestle	18.89
Captain Goodnight	22.89
Carmen Sandiego	25.89
Certificate Maker	29.89
Library Vol. 1	19.89
Chart'n Graph Tlbx	23.89
Classmates	27.89
Database Toolbox	23.89
Dazzle Draw	37.89
D-Code	20.89
DiskQuick	15.89
Dollars & Sense	71.89
DOS Boss	12.89
Double-Take	18.49
Eidolon	24.89
Essential Data Dup	20.89
Extra K	20.89
Fantavision	31.89
Fat Cat	18.49
Flex Type	15.49
Flight Sim II	34.89
Fontrix 1.5	58.89
Fntpks 1 thru 15	ea. 13.89
Font Works	33.89
Forecast	37.89
Frame-Up	15.49
Gato	21.89
G I Joe	24.89
Graphics Department	28.89
Graphic Magician	25.89
Graphworks	44.89
GPLE	25.89
Handler Package	58.89
Impossible Mission	24.89
I.O. Silver	15.89
Jeeves	28.89
Karateka	22.89
Knight of Diamonds	21.89
Kid Writer	24.89
King's Quest I, II or III	31.89
Koronis Rift	24.89
Legacy of Llylgamyn	24.89
List Handler	36.89
Locksmith	38.89
Macroworks	18.89
Mngng Yr Money	98.89
Megaworks	CALL
Merlin	41.89
Merlin Pro	64.89
Merlin Combo	68.89
Micro Cookbook	27.89
Millionaire	31.89
Minipix 1.2 or 3	15.49

APPLE SOFTWARE

Moebius	40.89
Mouse Talk	69.89
MouseWrite	88.89
Munch-A-Bug	23.89
NATO Commander	22.89
PFS: Plan	75.89
PFS: Write	75.89
PFS: File	75.89
Piece of Cake Math	23.89
Pinpoint	48.89
Prince	48.89
Printographer	23.89
Printmaster	24.89
Print Shop	31.89
Prt Shp Gr. 1,2,3 or 4	15.89
Print Shop Companion	24.89
Probyter	18.49
Pronto DOS	15.49
Program Writer	33.89
Power Print	20.89
Quicken	34.89
Report Card	32.89
Rescue on Fractalus	24.89
Reportworks	CALL
Rescue Raiders	21.89
Science tool kit	44.89
Sensible Grammar	55.89
Sensible Speller	68.89
Shape Mechanic	20.89
Sideways	38.89
Silicon Salad	12.89
Skyfox	27.89
Spellworks	29.89
Springboard Publisher	94.89
Star Fleet I (Flight)	33.89
Sticky Bear ABC	22.89
Car Builder	23.89
Drawing	22.89
Math 1 or 2	22.89
Math Word Prob.	22.89
Music	22.89
Numbers	22.89
Printer	22.89
Reading	22.89
Rd. Comprehension	22.89
Spellgrabber	22.89
Townbuilder	22.89
Typing	22.89
Summer Games I or II	24.89
Super Macroworks	32.89
Terrapin Logo	63.89
Think Tank	79.89
Thinkworks	59.89
Tip Disk #1	10.89
Toy Shop	38.89
Transylvania	13.89
Trinity	24.89
Triple-Dump	20.89
Turbo Database Tlbx	44.89
Turbo Pascal 3.0	44.89
Turbo Tutor	21.89
Type	28.89
Ultima III or IV	40.89
Understanding IIE	17.89
Utility City	15.49
Video Toolbox	23.89
Visable 6502	31.75
Wilderness	34.89
Wizardry	31.89
Wizard's Toolbox	23.89
Wizprint	16.89
Word Handler	36.89
Word Perfect	84.89
World's Grtst Ftball	24.89
Write Choice	24.89

	COMMODORE
Acrojet	22.89
Air Rescue I	24.89
Bard's Tale	30.89
Ballblazer	24.89
Back to Basics	134.89
Bank Street Storybook	27.89
Bank Street Speller	34.89
Bank Street Writer	34.89
Basic Toolkit	29.89
Blazing Paddles	24.89
Borrowed Time	20.89
Carmen Sandiego	22.89
Certificate Maker	29.89
Color Me	20.89
Cntdwn to Shtdwn	20.89
Fast Tracks	20.89
Gato	20.89
Gertrude's Secrets	20.89
G I Joe	24.89
Graphics Magician	27.89
Grt Amer Road Race	19.89
Hacker	20.89
Jet	27.89
Jet Combat Simulator	20.89
Karateka	22.89
Kennedy Approach	24.89
Kung Fu	20.89
Little Comp. People	24.89
Mail Order Monsters	24.89
Merlin	34.89
Mig Alley Ace	24.89
Multiplan 64/128	43.89
Nato Commander	22.89
Paper Clip	41.89
Print Shop	29.89
Print Shop Comp.	21.89
Pr. Shop Gr. 1,2,or 3	15.89
Rescue on Fractalus	24.89
Scrabble	27.89
Sideways	20.89
Silent Service	22.89
Spitfire Ace	20.89
Spreadsheet	34.89
Sticky Bear ABC	20.89
Numbers	20.89
Opposites	20.89
Shapes	20.89
Summer Games I or II	24.89
Temple of Apshai Trl.	24.89
Toy Shop	39.89
Transformers	24.89
World Games	24.89
World's Grtst Bsball	24.89
World's Grtst Ftball	24.89

	IBM APPLE COMMODORE
Ballyhoo	24.89
Clip Art (Vol 1 or 3)	17.89
Clip Art (Vol 2)	24.89
Copy II -	19.89
Crossword Magic	31.89
Crusade in Europe	24.89
Cutthroats	24.89
Early Games	20.89
Easy as ABC's	23.89
Enchanter	24.89
Family Roots	149.89
Fraction Factory	19.89
F-15 Strike Eagle	21.89
Graphics Expander	24.89
Ghost Busters	24.89
Hitchhiker's Guide	24.89
Leather Goddesses	24.89
Load Runner	22.89
Magic Spells	25.89
Mastertype	26.89
Math Blaster	27.89
Micro Lg. Baseball	24.89
Micro Lg. Manager	24.89
Micro Lg. Team	13.89
Mind Forever Voy	24.89
Music Construction	12.89
Newsroom	34.89
One-On-One	12.89
Pitstop II	24.89
Planetfall	24.89
Reader Rabbit	24.89
Sargon III	31.89
Sat (Harcort Brace)	27.89
Sorcerer	27.89
Speed Reader II	38.89
Spellbreaker	30.89
Spell It	27.89
Starcross	30.89
Star Trek I or II	27.89
Suspect	27.89
Tass Times	24.89
Ultima III	40.89
Temple of Apshai Tri	24.89
Trinity	24.89
Typing Tutor III	31.89
Will Writer	28.89
Winter Games	24.89
Wishbringer	24.89
Witness	24.89
Word Attack	27.89
World's Grtst Bsball	24.89
Zork I	24.89
Zork II or III	27.89
Zork Trilogy	46.89

	HARDWARE
Compuserve Starter	24.89
Datacase	7.89
Disk Notcher	4.89
Flip-n-File	10.89
Lemon	27.89
Lime	48.89
	APPLE HARDWARE
80 Col. 64K Card (II E)	49.89
Apple Cat II	184.89
Disk Drive Cont	47.00
Disk Drive Hi Tech	119.89
Gibson Light Pen	148.00
Grappler Buffered	116.89
Grappler Pro	74.89
Grappler (serial)	74.89
Grappler C	74.89
Hotlink	44.89
Kraft Joystick IIE IIC	23.89
Koala Pad -	78.89
Laser 128 Computer	389.00
Mach II Joystick	28.89
Mach III Joystick	34.89
Mach IV Joystick	59.89
Micromodem IIE	139.89
Mockingboard A or B	64.89
Mockingboard C	114.89
Multiram CX 512K	174.00
Multiram IIE 80/64K	119.00
Mouse House	7.49
Mouse Mat	6.49
Paddlesticks	26.50
Parallel Printer Card	44.89
Prometheus 1200A	254.89
Print-it	122.89
Ramfactor 512K	219.89
Ramfactor 1 MEG	289.89
Ramworks 64K	139.89
Ramworks 512K	199.89
Ramworks 1 MEG	269.89
Super Serial Card	89.89
System Saver Fan	58.89
Thunder Clock	109.89
Wildcard II	74.89
ZEE 80A Checkmate	54.89
Zoom IIE	102.89
PRINTERS	
Citizen 120D	174.89
Star LV1210	189.89
Star NX-10	249.89
Printer Stand	16.89
Okidata 182P	229.89
Okimate 20	209.89
Printer Ribbons	CALL
Imagewriter Black	4.49
Imagewriter Color	4.99
Imagewriter II Color	11.99
Color Paper Pack	12.89
Print Shop Refill	12.89
MONITORS	
Magnavox Monitors	CALL
Amdek Color 600	414.99

SILICON EXPRESS

5955 E. Main St. Columbus, Ohio 43213

1-614-868-6868

SILICON EXPRESS

5955 E. Main St. Columbus, Ohio 43213

Name _____

Address _____

City _____ State _____ Zip _____

Charge # _____ Exp. Date _____

QTY.	DESCRIPTION	PRICE

Computer Type _____ SHIPPING

Phone No. _____ TOTAL

Add $3.00 min. U.S. shipping, C.O.D. $5.00 extra. Hawaii and Alaska $4.95 min. Orders outside U.S. are not insured. Canada & Mexico 10% min. $10.00. All other countries 25% min. $30.00. MasterCard, Visa and school purchase orders accepted. Personal checks allow 3 weeks. 5.5% sales tax for Ohio residents. Defective replaced within 20 days. 20% restocking fee if not replaced with same item. Compatibility not guaranteed. Prices subject to change without notice.

ENTERTAINMENT

Title Publisher Price	Brief description	Hardware/ Equipment required	Backup policy	Ratings O	D	PS	GQ	EU	V
ALIENS Activision 2350 Bayshore Parkway Mountain View, CA 94043 (415) 960-0410 $35 ©1986	An exciting arcade adventure that matches the nonstop action of its source material—last year's hit movie. Six sequential mini-games re-create the ordeals of Ripley and her team of space marines.† —DELSON	C 64/128. Joystick. Color monitor.	90-day warranty. $7.50 thereafter.	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★ ★
FIST: THE LEGEND CONTINUES Mindscape, Inc. 3444 Dundee Road Northbrook, IL 60062 (312) 480-7667 $30 ©1986	Two people can compete in this kung-fu action game's training mode; or one player can complete the arcade adventure, seeking magical scrolls while tracking down the Warlord. —ADDAMS	C 64/128. Joystick(s).	90-day warranty. $13 for backup.	★ ★ ★	★ ★	★ ★ ★	★ ★ ★	A	★ ★ ★
GUNSHIP MicroProse Software 120 Lakefront Drive Hunt Valley, MD 21030 (301) 771-1151 $35 ©1986	Flying an Apache AH-64 helicopter gunship is the core of this exciting, edge-of-your-seat simulator. Provocative scenarios pit you against peoples who may not be enemies.† —DELSON	Reviewed on C 64/128. Planned for 64K Apple, Atari, Atari ST, IBM PC/PC*jr*.* Joystick recommended.	90-day warranty. $10 for backup.	★ ★ ★	★ ★ ★ ★	★ ★ ★ ★	★ ★ ★	D	★ ★ ★
MAKE YOUR OWN MURDER PARTY Electronic Arts 1820 Gateway Drive San Mateo, CA 94404 (415) 571-7171 $33-$40 ©1986	Prints all the clues, dialogue, evidence, invitations, and other items needed to host a "who-dunnit" party in which guests assume the roles of characters. The program is not used during the game. —ADDAMS	Reviewed on Apple. Also for C 64/128, IBM PC/PC*jr*.*	90-day warranty. $7.50 thereafter.	★ ★	★ ★	★ ★	N/A	E	★ ★
MERCENARY: ESCAPE FROM TARG Datasoft/IntelliCreations 19808 Nordhoff Place Chatsworth, CA 91311 (818) 886-5922 $30-$40 ©1986	An offbeat hybrid that combines a spaceship flight simulator with an explore-the-maze graphic adventure that occurs on an alien planet and has three alternative solutions for extra replays. —ADDAMS	Reviewed on C 64/128. Also for Atari, Atari ST.	90-day warranty. $7.50 thereafter.	★ ★	★ ★	★ ★	★ ★ ★	A	★ ★
OGRE Origin Systems 136 Harvey Road, Bldg. B Londonderry, NH 03053 (603) 644-3360 $40 ©1986	Set in the 21st century, when OGRE (a cybernetic tank) is master of the nuclear battlefield. Can be enjoyed by beginners because play is straightforward. —DELSON	Reviewed on C 64/128. Also for Amiga, Atari, Atari ST, 64K Apple, 256K IBM PC,* Macintosh. Joystick, mouse recommended.	90-day warranty. $5 thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★	★	A	★ ★
PORTAL Activision (see above for address and phone) $40-$50 ©1986	As a space traveler, you return to an Earth devoid of humans. With the help of Homer (a computer terminal), you unravel the mystery in this "novel." —DELSON	Reviewed on C 64/128. Also for Amiga, Apple, IBM PC,* Macintosh. Joystick, mouse.	90-day warranty. $7.50 thereafter.	★ ★ ★	★ ★ ★	★ ★	★ ★	A	★ ★ ★
RADIO BASEBALL Electronic Arts (see above for address and phone) $40 ©1986	You're the manager in a text-only baseball game with a variety of real teams and fantasy all-star squads. Each play is "called" by the computer. —DELSON	256K IBM PC/PC*jr*.*	90-day warranty. $7.50 thereafter.	★ ★ ★	★ ★ ★ ★	★ ★ ★	N/A	A	★ ★ ★
STAR TREK: THE PROMETHEAN PROPHECY Simon & Schuster Software One Gulf & Western Plaza New York, NY 10023 (212) 333-5800 $33-$40 ©1986	You become Captain Kirk in this all-text adventure, and you must beam down to an unexplored planet to find food for your crew. This requires interacting with an alien culture and ultimately saving them, too. Evocative and tough.† —ADDAMS	Reviewed on 64K Apple. Also for C 64/128, IBM PC/PC*jr*.*	30-day warranty. $5 for 11 months thereafter.	★ ★ ★ ★	★ ★ ★	★ ★ ★	N/A	A	★ ★ ★
WORLD BUILDER Silicon Beach Software 9580 Black Mountain Rd. San Diego, CA 92126 (619) 695-6956 $80 ©1986	I've tinkered with all the "write-your-own-adventure" programs, and no other makes the process as easy or yields such professional results. —ADDAMS	512K Macintosh.	90-day warranty. $5 thereafter. Not copy-protected.	★ ★ ★	★ ★ ★	★ ★ ★	★ ★ ★ ★	A	★ ★

RATINGS KEY **O** Overall performance: **D** Documentation: **PS** Play System **GQ** Graphics quality: **EU** Ease of use: **V** Value for money: ○ Poor: ★ Average: ★★ Good: ★★★ Very Good: ★★★★ Excellent: N/A Not applicable: E Easy: A Average: D Difficult: † Longer review follows chart.

*Titles listed for the IBM PC/PC*jr* will also run on many IBM PC compatibles; owing to the proliferation of compatibles, check with the publisher of the program or your dealer for compatibility.

You asked for it. You got it!

A COLLECTION OF OVER 200 SOFTWARE REVIEWS FROM FAMILY COMPUTING:

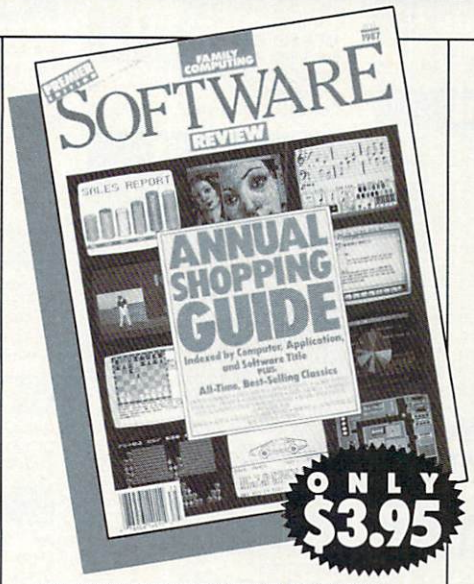
PREMIER EDITION

The Annual Software Review

An invaluable, at-your-fingertips shopping guide containing all the facts you need to make the best possible software buying decisions.

You told us you liked our regular monthly software reviews but you needed more. Well, here it is. Introducing the first ANNUAL SOFTWARE REVIEW — a composite "hit parade" of more than 200 of your favorite programs reviewed this past year in Family Computing.

Now, in one place, in one issue, you've got it all. Updated software descriptions. The *latest* prices. A fresh look at the classics. Warranty information. *Expert ratings* of performance, documentation, graphics, and value. Plus *in-depth* reviews of many of your other favorites.



SEE FOR YOURSELF WHY THE ANNUAL SOFTWARE REVIEW IS A MUST FOR EVERY COMPUTER-WISE FAMILY

FIND WHAT YOU WANT THE EASY WAY. It's a cinch to find your way around THE SOFTWARE REVIEW. Programs are indexed alphabetically, by application, and by computer. So you can head directly for the program you want, comparison shop, or just browse.

GET ALL THE INFORMATION YOU NEED IN ONE CONVENIENT SOURCE. We cover every base: business/productivity, education and entertainment. You'll find programs for the Apple, Atari, Commodore, Tandy, IBM PC & Compatible Computers.

SAVE TIME. No more searching for clippings of reviews or old issues. No more wasted time in stores trying to find the program right for you. THE ANNUAL SOFTWARE REVIEW puts everything you need at your fingertips so you can make the right buying decisions every time.

SAVE MONEY. For only $3.95 (plus postage and handling), you'll have all the information you need *when you need it*. What's more, the REVIEW is packed with useful information you can use with software you may already own.

THE ONLY GUIDE OF ITS KIND. Our unique long and short reviews give you the kind of comprehensive, in-depth information unavailable anywhere else.

HAVE A NEW LOOK AT THE "OLDIES BUT GOODIES." Get updated reviews of the classics: popular software that's stood the test of time.

DELIVERED TO YOUR DOORSTEP. Don't run the risk of not finding THE ANNUAL SOFTWARE REVIEW on your newsstand. To reserve your copy, just fill out and mail the coupon along with your check or money order to the address below:

Yes Please send me _____ issues of THE ANNUAL SOFTWARE REVIEW at $3.95 each plus $1.00 for postage and handling. You can expect delivery within 4–6 weeks.

Name _____

Address _____

City/State/Zip _____

Enclosed is my ☐ check ☐ money order

for $_____.

Make checks payable to Family Computing and mail to:

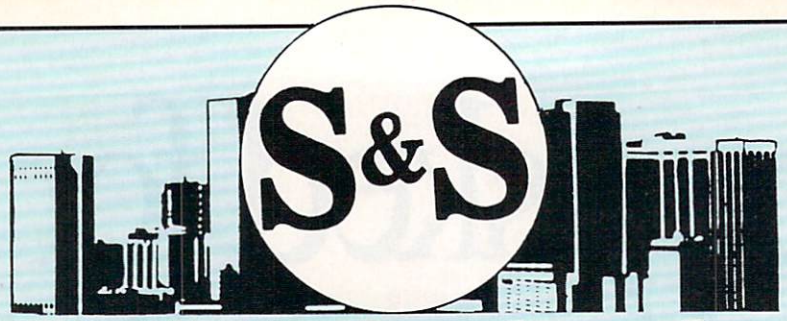
Family Computing FCSG687
The Annual Software Review
2931 East McCarty Street
P.O. Box 8008
Jefferson City, MO 65102-9966.

FAMILY COMPUTING

PUBLISHED BY SCHOLASTIC INC.

1-800-233-6345

1-800-331-7054



226 Lincoln Road
Miami Beach, FL 33139

S & S Wholesalers, Inc.

WHOLESALE TO THE PUBLIC
BUY BELOW DEALER COST!

ATARI HARDWARE

130XE Computer	$134.90
65XE Computer	$ 87.90
800 XL Computer	$ 79.90
1200 XL Computer	$ 69.90
1050 Disk Drive	$134.90
1027 Printer	$ 99.90
XMM801 Printer	$199.90
XM801 Modem	$ 37.90
XC11 Data Cassette	$ 37.90
Atari Light pen	$ 37.77
Atari Touch Tablet	$ 42.77
800 XL Power Supply	$ 29.77

ATARI 128K
Word Processing System

130XE Computer
1050 Disk Drive
1027 Printer
Atariwriter Plus
2 Games $399.77
w/ XMM 801 Printer $447.77

COMMODORE HARDWARE

C128 Computer	$259.90
C1571 Disk Drive	$239.90
MPS 1000 Printer	$249.90
C1902 Monitor	$288.00
C1350 Mouse	$ 37.90
C1660 300 Baud Modem	$ 49.90
C1670 1200 Baud Modem	$148.90
C64 Computer	$139.90
64C Computer	$ CALL

ST HARDWARE

520 ST Computer	$399.90
SF 314 Disk Drive	$207.77
SF 354 Disk Drive	$149.77
SCI 224 Monitor	$297.77
SCI 24 Monitor	$167.77
SM 804 Printer	$199.77

ST HARD DRIVES

Atari 20MB	$ 649.90
Supra 10MB	$ 629.90
Supra 20MB	$ 639.90
Supra 30MB	$ 829.90
Supra 60MB	$1789.90

ST SYSTEMS

COLOR SYSTEM
520 ST Computer
SF 354 Disk Drive
SCI 224 Color Monitor
Basic/Logo/First Word ..$779.00

MONOCHROME
520 ST Computer
SF 354 Disk Drive
SCI 24 Monitor
Basic/Logo/First Word ..$569.00

MONITORS

Samsung 14" Color	$139.90
Samsung Green 12"	$ 49.90
80 Col. Cable	$ 8.77
Monitor Cable	$ 5.77
NEC 12" Color	$134.90

ABACUS

Assembler Monitor	$24.99
Basic 128	$39.99
Basic 64	$24.99
Cadpak 128	$39.99
Cadpak 64	$27.99
Chartpak 128	$27.99
Chartpak 64	$24.99
Cobol	$27.00
Forth	$26.90
Powerplan	$26.90
Quick Copy 2.0	$14.90
Super C Compiler	$39.90
Super Pascal	$39.90
T.A.S.	$39.90
Video Basic	$27.90
XPER	$39.90

STAR MICRONICS

NX 10	$239.90
LU 1210	$199.77

DISKETTES

Sony DSDD 5 1/4"	$ 9.97
Memorex DSDD 5 1/4"	$ 8.97
Precision DSDD 5 1/4"	$ 7.97
Bonus by Verbatim DSDD 5 1/4"	$ 6.97
Sony 3 1/2" DSDD	$25.50
Sony 3 1/2" SSDD	$19.50
Winners 3 1/2" DSDD	$24.00

PRINTERS

Okimate 10	$124.77
Okimate 20	$134.77
Plug-N-Print C64	$ 59.77
Plug-N-Print Amiga	$ 69.77
Panasonic 1091	$224.77
Panasonic 1080	$199.77
Star NX10	$239.77
Star SG10C	$228.77
Okimate 120	$224.77
Epson LX 80	$239.90
Epson FX 85	$369.90
Epson FX 286	$479.90

EPSON PRINTERS

LX 80 w/Tractor	$259.90
FX 85	$379.90
FX 268	$504.90

COMMODORE CLOSEOUTS

VIC 1525 Graphics Printer	$ 99.90
MPS 801 Printer	$ 97.90
MPS 803 Printer	$109.90
C1600 300 Baud Modem	$ 37.90
Commodore Plus/4	$ 79.90

JOYSTICKS/ ACCESSORIES

WICO The Boss	$10.77
WICO Ball	$14.77
WICO Bat	$14.77
WIKO 3 Way	$18.77
WKOS Way	$18.77
Kraft	$ 8.77
Recoton Big Shot	$11.77
3 1/2" Drive Cleaner	$14.77
5 1/4" Drive Cleaner	$ 8.77
5 1/2" Drive Cleaner	$ 9.77
CRT Cleaner	$14.77
C64 Cover	$ 6.77
C128 Cover	$ 7.77
800 XL Cover	$ 7.77
520 ST Cover	$ 9.77
Drive Cover ST	$ 7.77
1050 Cover	$ 7.77
1025 Cover	$ 7.77
1017 Cover	$ 7.77
130 XE Cover	$ 7.77
1224 Cover	$11.77
Print Head Cleaner	$ 7.77

BATTERIES INCLUDED

Consultant	$35.77
Paperclip	$35.97
Paperclip w/Spell	$47.77

1040 COLOR & MONO SYSTEMS

IN STOCK
CALL FOR PRICING ...

ACCESS

Mach 5	$22.50
Mach 128	$29.90
Leader Board	$23.90
Tournament Disk	$12.90

APPLE

Eidelon	$12.77
Koronis Rift	$12.77
Perfect Writer	$29.77

ATARI

Intro to Basic	$ 4.77
Ultima II	$ 17.77

MASTERTRONIC

Last V8	$ 6.49
5 A Side	$ 6.49
Slugger	$ 6.49
Paul Macartney	$ 6.49
BMX Racer	$ 6.49
Sky Jet	$ 6.49
Line Action Biker	$ 6.49
Skiwriter	$11.99
Busicalc 3	$11.99
Instant Recall	$11.99
• All 3	$29.97

MICROPROSE

Acrojet	$20.77
F15 Stirke Eagle	$19.47
Conflict in Vietnam	$19.47
Gunship	$22.77
Silent Service	$24.77

SPRINGBOARD

Newsroom	$29.00
Clip Art I	$18.90
Clip Art II	$22.00

SUBLOGIC

Jet	$25.70
Flight Simulator II	$31.70
Scenery Disks 1-6	$13.70
Scenery Disks 7-12	$13.70
Scenery Disks 6 Pack	$69.70

PRECISION

Superbase 64	$47.77
Superscript 64	$47.77
Superbase 128	$52.77
Superscript 128	$52.77

CLOSEOUT

"MUPPET PAD" by Koala Technologies . $19.77

BRODERBUND

Karateka	$17.00
Printship	$25.90
LIB 1/2/3	$14.90
Companion	$24.90
Bank St. Writer	$32.90

8 BIT BACK-UP PROGRAM

Chipmunk	$29.77

ACCOLADE

Dam Busters	$17.90
Fight Night	$17.90
Hardball	$17.90
Law of the West	$17.90

AMIGA

Call for Pricing
... IN STOCK ...

COMMODORE

1986 Taxpayers Survival	$ 9.77
Commodore Super Expander	$ 9.77
Intro to Basic	$ 4.77
Magic Desk I	$14.77
Hes Writer 64	$19.77
Multiplan	$24.77
Castle Wolfensten	$ 7.77
Jet by Sublogic	$14.77
Zaxxon	$ 9.77
Music Cals I	$ 7.77

COMMODORE CLOSEOUTS

(Specials)

Zork I, II, III	$4.77

DIGITAL SOLUTIONS

Pocket Writer 64	$23.77
Pocket Writer 128	$28.77
Pocket Planner 64	$23.77
Pocket Planner 128	$28.77
Pocket Filer 64	$23.77
Pocket Filer 12	$28.77

EPYX

Summer Games	$23.90
Summer Games II	$23.90
Winter Games	$23.90
Fast Load	$23.90
Multiplan	$39.90
World Karate Champ	$17.90
World's Greatest Baseball	$22.90
Koronis Rift	$22.90
Eidolon	$22.90

TIMEWORKS

Data Manager 128	$ 37.77
Swiftcalc 128 w/Sideways	$ 37.77
Wordwriter 128 w/Spell Check	$ 37.77
Partner 128	$ 37.77
All Four	$149.90
Data Manager	$ 27.77
Word Writer	$ 27.77
Swift Calc	$ 27.77
All Three	$139.77

1-800-233-6345 ORDERS ONLY 1-800-331-7054

CUSTOMER SERVICE OR IN FLORIDA (305) 538-1364
FREE FREIGHT ON ALL ORDERS OVER $100.00

Orders under $100.00 add $4.00 shipping and handling. C.O.D. orders add $4.00 prices reflect a 3% cash discount. Add 3% for VISA/MC AMEX Personal checks allow 2 wks for processing. Prices Subject to Change Without Notice

ORDERS RECEIVED BEFORE 12:00 PM WILL BE SHIPPED SAME DAY. **Florida residents add 5% sales tax**

CIRCLE READER SERVICE 44

SOFTWARE REVIEWS

On the following pages, you'll find in-depth reviews of some of the programs listed in the Software Guide. Refer back to the Guide on page 49 for information such as backup policies and addresses of software publishers.

EDUCATION/ FUN LEARNING

Learning DOS

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Microsoft Corporation
PRICE: $50
PUBLISHER'S SUGGESTED AGES: 16+

Microsoft, the company that brought the dreaded A› prompt into the world, has recently produced an easy guide to deciphering the complexities of MS-DOS. It's a disk-based tutorial that teaches all the essential DOS operations (one screen at a time), with interactive practice sessions, on-line help, and a how-to-get-the-job-done attitude that omits the wealth of technical detail that can delight advanced users, but scare newcomers.

Learning DOS comes on three disks. One disk contains a version of the course tailored to hard-disk users; another has a course for floppy-based systems; and the third is a ready reference guide. By typing "Help" at the DOS prompt—with this reference disk in your drive—you get a well-indexed, fairly comprehensive guide to DOS commands.

The course lessons are well-organized and efficient without being terribly exciting. Then again, I frankly can't imagine how DOS could ever be made exciting. There are some decorative graphics, but nothing gimmicky—just straightforward, logically organized lessons.

There *are* a few annoyances in the lessons. The program is more persnickety than DOS itself when it comes to spacing between words in a command. The program also has an annoying habit of supplying the correct answer as soon as you make a mistake in a practice session, without first letting you know you goofed and giving you a chance to work it out. Still, these are minor problems.

For starters, *Learning DOS* will teach you as much about the subject as you'll need to know. However, a good book on the subject is definitely in order as well. In fact, Microsoft Press offers a very nice volume called *Running MS-DOS*. I wish it had been included with the software package; that would have made it a much better value.

—STEVE MORGENSTERN

Venture Magazine's Business Simulator

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Reality Technologies
PRICE: $70
PUBLISHER'S SUGGESTED AGES: 16+

Even if you don't have an MBA, read *The Wall Street Journal*, or wear three-piece suits, you should enjoy this richly detailed economic simulation. Not that an MBA wouldn't help: As you progress through five levels of decision making, the range of choices grows increasingly complex, and the wealth of information can be intimidating at times. Still, even a liberal-arts graduate like myself was able to learn more about the concepts and practices of business finances with no motivation other than the intense desire to beat the pants off Hewlett-Packard and dominate the East Coast market. What higher praise can I offer for a business-simulation program?

The game pits five companies against each other in marketing up to three different new products—for example, household robots. One or two people can play, with the computer calling the shots for the remaining companies. The early rounds consist of setting your price, your advertising budget, and the number of products you'll buy from an overseas supplier. Soon, though, you must start making the goods yourself, which means building and running a factory—and that requires raising money through a variety of financial means, such as the sale of bonds or stock. If you survive long enough, you'll need a sales force and money for Research and Development. The next level involves expanding your product line, which causes competition for resources within your company. Finally, if you last long enough, you face the challenges of expanding with new products and into new geographical markets.

The heart of the program is an in-depth simulation of a complete economy prepared by faculty members from the Wharton School in Philadelphia. In fact, versions of this program are used in business schools and corporate training programs.

I wished I had received more background information since the package is aimed at consumers; the kind of in-depth factual documentation provided with *Flight Simulator* would have been appropriate. Nevertheless, it is hard to fault a program that makes financial management this exciting. —STEVE MORGENSTERN

HOME BUSINESS & PRODUCTIVITY

MindWrite

HARDWARE REQUIREMENTS: 512K Macintosh.
PUBLISHER: MindWork Software
PRICE: $125

MindWrite is a good, mid-level word processor and outliner for the Macintosh. In some circles, software of this sort is called an "idea processor." But whatever you call it, the process is straightforward: First you develop a preliminary outline of your ideas, and then you use the outline to structure the writing. As new ideas occur, you can flip back and forth between the outline and text, making appropriate changes. If your thinking veers in new directions, you simply rearrange the sections of the outline, and the corresponding text follows suit.

These are all capabilities that can be found in most idea processors, and they are all available in *MindWrite*. But *MindWrite* offers some additional features that make it stand out from the crowd. For example, *MindWrite* gives you a seamless integration between word processor and outliner; both are active in a single document, so you no longer have to move from one mode to the other. Any changes in documents are marked with the date, so that you can later retrieve only those changes that were made on or after a particular date. You can even search for a particular word or phrase and have *MindWrite* separately save all the text that includes that material—a great feature if you want to focus on just one idea or concept and see how you've dealt with it throughout.

However, some of *MindWrite*'s limitations are surprising. For example, there are no provisions for automatic footnoting, indexing, or alternate odd/even-page header and footer arrangements; these would be helpful

JVC DISKETTES

DS/DD w/sleeves & labels ..... $ .50 ea.
JVC Brand 5.25" DS/DD .....$7.50 bx
NO MINIMUM Lifetime Warranty
Call for quantity discounts!!
100% Certified Error Free!

COPY HOLDER w/swing arm,
non-magnetic, w/rubber guide $15.00
Extra Tyvek Sleeves ..... $ .05
COLOR DS/DD Diskettes (16 colors) ..... $ .60
(Includes sleeves & labels)
JVC Brand 3.5" SS/DD $12.50
JVC Brand 3.5" DS/DD $16.00
JVC Brand HIGH DENSITY (Box of 10) .. $14.00
DS-100L — Holds 100 Diskettes.
Hinged lid, lock & key ..... $ 9.00
DX-100B — Holds 100 Diskettes,
Hinged lid, lock & key $10.00
(Same as DS100L but sideways)
SRW Library Case,
Hard plastic, easel type ..... $ 1.50
(Red, blue, green, yellow, black, grey, beige)

RIBBONS	Black	*Color
Epson MX, FX, RX-80, 85	$2.50	$3.50
Epson MX, FX, RX-100, 185, 286	$4.00	$5.00
NEC 8023A, Imagewriter, CITOH Prowriter	$3.00	$3.50
Okidata 80, 82, 83, 92, 93, Star Gemini 10X, 15X	$1.25	$1.75
Okidata 182, 183, 192, 193	$3.50	$5.00
Panasonic 1090, 1091, 1092	$4.00	$5.00
Toshiba P1340, P1350, 1351	$3.50	$4.00
IBM Proprinter	$4.00	
Epson LX80	$3.00	$4.00
Epson LQ1500	$3.25	

*Red, blue, green, brown, yellow, purple, gold, silver, orange

Call For Other Ribbon Prices
Call For Current Free Catalog!

DATA DYNAMICS

2377-B PACIFIC AVE., LONG BEACH, CA 90806
(213) 424-1172 (Call Collect!!)
(800) 351-7832 Outside Calif.
Shipping 5% of order (min. $2.50) plus $1.90 C.O.D.

CIRCLE READER SERVICE 13

CONVERSE WITH YOUR COMPUTER

AT LAST! A FULL IMPLEMENTATION of the original ELIZA program is now available to run on your personal computer!

Created at MIT in 1966, ELIZA has become the world's most celebrated artificial intelligence demonstration program. ELIZA is a non-directive psychotherapist who analyzes each statement as you type it in and then responds with her own comment or question—and her remarks are often amazingly appropriate!

Designed to run on a large mainframe, ELIZA has never before been available to personal computer users except in greatly stripped down versions lacking the sophistication which made the original program so fascinating.

Now, our new personal computer version possessing the **FULL** power and range of expression of the original is being offered at the introductory price of only $45. And to let you find out how she does it (or teach her to do more) we have included the complete **SOURCE PROGRAM** (written in BASIC) at no extra cost.

Order your copy of ELIZA today and you'll never again wonder how to respond when you hear someone say, "Okay, let's see what this computer of yours can actually do!"

READ WHAT THE EXPERTS SAY ABOUT OUR VERSION OF ELIZA:

"Much more than a mere game...You'll be impressed with ELIZA...A convincing demonstration of Artificial Intelligence." —*PC MAGAZINE*

"Delightful entertainment...An ideal medium for showing off your system." —*MICROCOMPUTING MAGAZINE*

"ELIZA is an astounding piece of software...A fascinating program to use and study." —*BARON'S MICROCOMPUTER REPORTS*

"ELIZA is a great way to introduce your friends to computers...A very funny party game." —*PETER A. McWILLIAMS*

"ELIZA is an exceptional program, one that's fun to use, shows off your machine, and has great historical interest." —*POPULAR COMPUTING MAGAZINE*

"This version of ELIZA is the best we have seen. As a party game, it is unmatched." —*HOME APPLICATIONS FOR THE C-64*

ELIZA IS AVAILABLE IN THE FOLLOWING FORMATS:

- IBM PC, PCjr., PC-XT and all compatibles.
- All Apple II computers (II, II Plus, IIe, IIc)
- Apple Macintosh (Microsoft BASIC required)
- Commodore 64 (specify disk or cassette)
- 5¼ inch or 8 inch disk for all CP/M systems

All versions are $45 and include a six page users manual.
Please add $2.00 shipping and handling to all orders
(California residents please add 6½% sales tax)

ARTIFICIAL INTELLIGENCE RESEARCH GROUP
921 North La Jolla Avenue, Dept. F
Los Angeles, CA 90046
(213) 656-7368 (213) 654-2214
MC, VISA and checks accepted

CIRCLE READER SERVICE 7

SOFTWARE REVIEWS

for most users. More surprising is the fact that only two symbols are provided for marking outline headings (either a diamond or legal-format section numbers such as 2.1 or 4.2), although paragraphs within the outline can be marked with bullets. Finally, while graphics from other software (such as *MacPaint*) can be imported, resized, and rearranged, text cannot wrap around the pictures. Instead, it stops above each picture and restarts below it.

Even though these limitations to *MindWrite* are worth thinking about, it's still a solid value that should be given serious consideration. —TONY MORRIS

NewsMaster

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Unison World
PRICE: $100

NewsMaster is good news indeed. It offers an easy, responsive, and cost-effective way to create attractive newsletters, bulletins, announcements, and fliers. While it doesn't have all the features of a true desktop-publishing system, it costs a fraction of what most systems cost. I created multicolumned newsletters with attractive fonts and eye-catching graphics all before I spent my first hour with the program.

That's because *NewsMaster*'s commands are menu-based and rely mostly on icons. And there are also text prompts that guide you through multistep commands such as shrinking or moving a graphic.

From the main menu, you may opt to deal with art or text. Select Art Edit and you can choose from over 250 excellently rendered pictures that are whimsical without being juvenile. Once selected, you stamp (with the stamp icon) the picture into your newsletter. Your text can wrap around the picture which can be enlarged, flipped, cropped, and surrounded with a border.

When you select Text Edit, a font menu awaits with 10 newsletter-worthy fonts in a number of sizes and boldface and italics. As you scroll through the list of fonts, a sample of each pops into view. You can also import ASCII text or use pictures from the two *PrintMaster Plus Art Gallery* disks (also from Unison World).

NewsMaster can't do everything. Multiple-page documents are possible, but difficult to manage. The program's distinctive icon menus are best suited to be used with a mouse, but none are supported. The text-wrapping feature is primitively implemented, and elaborate newsletters can be tedious because you can have only limited control (for instance, no double headlines, no incremental

point sizes, and no orphan control).

NewsMaster's documentation is tutorial style, and the manual's tips on how to plan a good newsletter are helpful. *NewsMaster* is fun for the whole family and—provided you have minimum design sense—the program's results are good enough to be used for some professional situations, too. —ROBIN RASKIN

Write Now

HARDWARE REQUIREMENTS: 256K IBM PC.
PUBLISHER: Airus, Inc.
PRICE: $150

With its Clairvoyant mode, the *Write Now* word processor is a lazy typist's delight. When you type a word the program recognizes from its dictionary, the computer warbles and finishes the word automatically. Typing "hardw" and "diske," for example, will produce "hardware" and "diskette" on the screen.

The program contains several more interesting features based on what the publisher calls "intuitive processing." You can set the spelling checker to beep and highlight any misspelled word as you type; a window pops up with suggested corrections. And in the Spell Guard mode, the program beeps and will not allow you to continue until you've corrected the misspelled word.

I had mixed reactions to these clever features. As a computer hobbyist, I found the program quite fascinating. But as a touch typist and writer, I disabled the frills. The beeps, warbles, and automatic windows interrupted my train of thought. I prefer a basic word processor with a spelling check on the

As seen in Family Computing April 1987 issue p. 45

BASEBALL FANATIC

Copy Protected **$39.95**

Non-Protected **$49.95**

* You manage one of thirty actual World Series teams * Players are rated by their real-world statistics * Play each pitch—not one pitch per batter * Create your own team * Custom team disks available—any thirty teams from 1910 to present for only $29.95 * Three play modes, five skill levels * Fully menu driven * Requires 256k and color card * For IBM-pc's and compatibles—play speed adjusts to suit *your* compatible.

Stat Compiler and File Regular . . . **$24.95**

Editor for Baseball Fanatic Special Only **$ 9.95**

Lists players and teams by nine different categories including runs batted in, home runs, and batting averages. You can also change player descriptions such as name, position and playing statistics.

Special Offer—Order now and receive a free official Baseball Fanatic T-Shirt. Please specify S-M-L-XL when ordering

To order by mail send check or money order to:

Performing Arts Software Inc.
320 N. Bazil Avenue
Indianapolis, IN 46219
Now available for Apple II series. Requires 128k.

Credit card orders Call:
(317) 897-3591
7 days a week.

Now Available—Football Fanatic. Complete with 28 pro **and** 50 college teams—only **$39.95.**

Dealers inquire on your letterhead

MasterCard VISA

CIRCLE READER SERVICE 34

MICROMOUSE®

A SERIAL, OPTO-MECHANICAL, THREE BUTTON MOUSE

Micromouse, for IBM PC, XT, AT and compatibles, has three function buttons with programmable options and high resolution 200 CPI. Bundle includes mouse driver and Menu-Pops software.

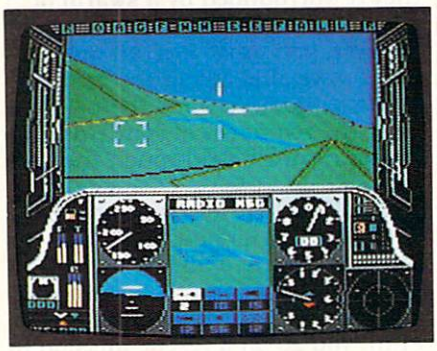
Think Quality • Think Input

SOFTWARE REVIEWS

Gunship

HARDWARE REQUIREMENTS: C 64/128.
PUBISHER: MicroProse Software
PRICE: $35
REVIEWER'S SUGGESTED AGES: 10+

You are tense with anticipation as your Apache AH-64 gunship hovers behind a hill in West Germany, awaiting the chance to discharge a tank-busting missile against the invading Warsaw Pact troops. As you take a quick shot at an approaching formation, you see they are armed with the latest Soviet weaponry. You acquire your target, fire, veer left, let



loose a decoy or two to divert the missiles they're firing at you, jink up and down to throw off the aim of their pursuit 'copters, and hope you'll be able to evade them.

In terms of action alone, *Gunship* is the best flying game we've ever played. It's fast-moving, requires careful planning and letter-perfect execution of each of the hundreds of special missions, and puts you in the seat of a heavily armed weapon of awesome potential. You really have to stretch to win this one.

Politically, however, you must be willing to stretch as well; the combat situations that *Gunship* places you in are not all historically accurate. Some are potential hot spots with targets and enemies that might be considered provocative. In order to enjoy the game's edge-of-the-seat excitement, one must be willing to overlook the moral implications of firing upon Nicaraguans, Cubans, Russians, Czechs, Poles, East Germans, Iranians, Iraqis, Lebanese, Syrians, Vietnamese, and other real or imagined enemies.

The game offers a variety of operations, each of which can be accomplished by arming your chopper with a specific configuration of weapons. As you progress from scenario to scenario, you will gain rank, prestige, honors, and, of course, more dangerous assignments.

Playing *Gunship* is a pulse-pounding experience, and if you can overlook the provocative nature of its scenarios, it could become one of your favorites. —JAMES DELSON

Star Trek: The Promethean Prophecy

HARDWARE REQUIREMENTS: 64K Apple, C 64/128, IBM PC/PC*jr*.
PUBLISHER: Simon & Schuster Software
PRICE: $33–$40
REVIEWER'S SUGGESTED AGES: 10+

The second text adventure based on the hit TV show *Star Trek* flies circles around the original. It is better designed, better programmed, and much truer to the spirit of the television series.

In the title screen, Captain Kirk quotes Star Fleet Command's maxim regarding alien cultures: "You can look, but don't touch." Then you, as Kirk, find yourself commanding the Enterprise as it nears the planet Prometheus 4. Before you can say "Beam me down, Scotty," a Romulan warship attacks. If you win the subsequent space battle, Spock reports that leaking coolant from the phasers has contaminated the entire food supply, then suggests your only hope is to beam down to the planet and scout for food.

Now the atmosphere shifts to a new and subtle form of character play that I'll call cultural interaction. Living atop a mesa in a hostile desert, the Prometheans are a mysterious people divided into distinct castes: Traders, Defenders, Chanters, Sustainers, and Delighters. Your instruments indicate a vast supply of protein stored beneath the Prometheans' tower, but a Trader informs you that their leader (affectionately dubbed "The Afflictor") inexplicably allows them to eat for only one day per week. Observing the rituals of the Chanters, the psychic powers of the Sustainers, and other facets of Promethean life, you realize the key to obtaining the needed food hinges on unraveling the mysteries of this alien culture—and the significance of the Promethean Prophecy.

Star Trek's evocative prose faithfully portrays the television characters; for instance, Bones constantly squabbles with Spock, who remains as enigmatic as ever. Though dubious of the original *Star Trek* adventure, I found this one engaging and recommend it for all space adventurers. —SHAY ADDAMS

completed document—an option that is also available.

It depends, as always, on your application. The program might be useful and fun for teaching word processing at the elementary and junior high levels. Although most operations require two keystrokes, *Write Now* is easy to use with its menus, windows, and help screens. I was happily typing a letter after about an hour with the well-written documentation.

Designed for short- to medium-length memos, letters, and reports, the program accommodates files up to 64K, holds roughly 20 single-spaced pages, and has more than adequate power for home or small-office use. It offers all the standard features, including headers and footers, page numbering, file- and mail-merge, cut and paste, and search and replace.

On the negative side, however, with only 256K, you must use the small 15,000-word dictionary. The 35,000-word dictionary requires 384K and still won't accommodate a large vocabulary; nonetheless, it's easy to add words to the dictionary. And at $150, the cost is a bit steep for what's basically a simple word processor, although most other writing programs don't offer the same kind of help with spelling.

Aside from that, *Write Now* is an interesting word processor that is fun to operate and performs as advertised. Company support, in my case at least, was excellent. Instead of canned music, the first ring on the technical hot line produced a real person who could answer my questions about the package.

—BOB SWEARENGIN

ENTERTAINMENT

Aliens

HARDWARE REQUIREMENTS: C 64/128.
PUBLISHER: Activision
PRICE: $35
REVIEWER'S SUGGESTED AGES: 8+

You don't always do what's best with your life, but sometimes you have no choice. Having been the sole survivor of a deadly encounter with slime-dripping, alien creatures seemed enough excitement for one lifetime, but Ripley has decided to return to the planetoid LV-426. She plans to avenge the deaths of her fellow crew members and rid herself of the nightmares that mock her existence. So begins the game adaptation of last summer's hit movie *Aliens*.

This exciting arcade adventure is a match for the nonstop action of its namesake. Six sequential mini-games recreate the ordeals of Ripley and her team of space marines. You begin by steering a shuttle craft down to the planet, being careful to adhere to the proscribed flight path in order to land properly. Next, you must have four of your eight armed space marines fight their way out of the below-ground complex where they're surrounded by a swarm of aliens. Then, armed with a flame-thrower, you must fend off wave upon wave of aliens in the base operations room, keeping them at bay until the remnants of your team can cut an escape hole through the back door.

Next, with the aliens in hot pursuit, you have to find your way through a maze of ducts, trying to get back to the landing field so you can escape this living nightmare. Fifth, you go on a rescue mission to save the little girl believed to be the only colonist to survive the alien onslaught. Working against time, and with limited ammunition, you must find her and bring her to safety. And, in the end, you have your chance for revenge as you face off against the Alien Queen, who has turned all the colonists into eggs

that will eventually hatch into aliens like the ones you've been fighting.

Whew! This is one of the most exciting programs we have tested in four years of gaming at FAMILY COMPUTING.

Aliens creates a you-are-there feeling for players, who can work as teams or play solo. Five of the six scenarios are excellent; only the last encounter with the queen proved to be a slight letdown. Still, *Aliens* was highly recommended by all our playtesters.

—JAMES DELSON

LOTTO CIPHER™

GET THE BEST ODDS ON ANY LOTTERY
SIX NUMBER - PICK FOUR - DAILY GAME

- PRODUCES FOUR COMBINATIONS OF NUMBERS TO CHOOSE FROM.
- ANY AMOUNT OF BALLS AND NUMBERS CAN BE PROGRAMMED.
- PRINTS OUT PAST LOTTO NUMBERS DRAWN, PAST COMPUTER PICKS, AND NUMBER DRAW FREQUENCY LIST.
- RANDOM NUMBER GENERATOR INCLUDED.

$29.95 C-64/128

Window Magic

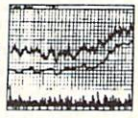
SUPER HI-RESOLUTION DRAWING IN MULTI OR MONO COLOR

- COPY
- FILL
- LINES
- DRAW
- COLOR SQUARES
- TYPES LETTERS AND GRAPHICS
- MIRROR, FLIP, AND SCROLLING WINDOWS
- ZOOM-EXPANDS A WINDOW TO DOUBLE SIZE
- SAVE AND LOAD YOUR WINDOWS ON DISK
- PRINTS ON STANDARD DOT MATRIX PRINTER
- CLONE COLOR ATTRIBUTES
- POLYGON SHAPES-EXPAND, SHRINK AND ROTATE, THEN STAMP ANYWHERE
- ZOOM PLOT-DRAW ON AN EXPANDED WINDOW AND YOUR DRAWING AT THE SAME TIME

$24.95 C-64/128

STOCK BROKER

PROFITS GUARANTEED OR YOUR MONEY BACK



BUYING GOOD QUALITY, VOLATILE ISSUES AND USING THIS TRADING SYSTEM WILL HAVE YOU FULLY INVESTED AT THE LOWEST PRICES AND CONVERTING TO CASH AS THE STOCK NEARS ITS PEAK.

- TECHNICAL TRADING THAT WORKS.
- BAR GRAPH PRINT-OUTS.
- RECORD UP TO 144 STOCKS ON A DISK.

$29.95

COMMODORE, COMMODORE AMIGA, AND IBM SYSTEMS

ACORN OF INDIANA, INC.

2721 OHIO STREET
MICHIGAN CITY, IN 46360

219-879-2284

SHIPPING AND HANDLING, ADD $1.50 - C.O.D.'S ACCEPTED
VISA AND MASTER CARD ORDERS ADD 4%
INDIANA RESIDENTS ADD 5% SALES TAX

CIRCLE READER SERVICE 3

LEARN PROGRAMMING

MASTER COMPUTERS IN YOUR OWN HOME

Now you can write programs and get a computer to do just what you want. Get the most out of any computer, and avoid having to pay the high price of pre-packaged software.

LEARN AT YOUR OWN PACE IN YOUR SPARE TIME

Our independent study program allows you to learn about computers, operations, applications and programming in your spare time, at home. Our instructors provide you with one-on-one counseling.

LEARN EVEN BEFORE YOU DECIDE ON A COMPUTER

Everything is explained in simple language. You will enjoy learning to use a computer—EVEN IF YOU DON'T OWN ONE. Learn to program on any personal computer; IBM, APPLE, COMMODORE, TRS, and more.

BE YOUR OWN COMPUTER EXPERT

Programming is the best way to learn to use computers, and we can show you the best—and most economical—way to learn programming!

Send today for your free information package. No obligation. No salesman will call.

halix INSTITUTE
CENTER FOR COMPUTER EDUCATION
1543 W. Olympic ▪ 226 Los Angeles, CA 90015-3894

POWER
FOR THE COMPUTER GENERATION

Zany Game Ideas Page 61

Show The Experts Your Earth-Shattering Game

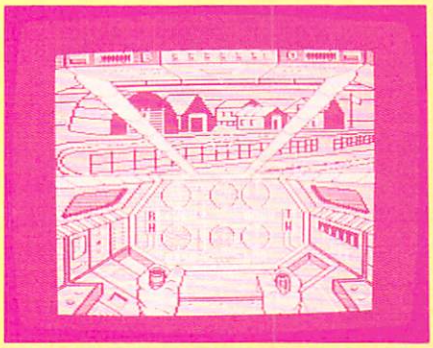
When your friends come over, they couldn't care less about talking to *you*. They head straight for your computer to play *Quavering Quasars*, the great new game you've invented. Are they addicted? Then maybe it's time to show your creation to the experts.

Getting a program published by one of the big software publishers is tough, but not impossible. Ask **Will Harvey**, **Chris Gray**, and **Ray Tobey**—all software designers who made it big while they were teenagers. The competition is fierce, and software publishers accept very few game submissions. However, if you think you've designed something special, here are some things to consider before you send your program to a software company.

Is it fun? "The fun factor is probably most important," says John P. Manley, assistant producer of product admissions for **Electronic Arts**. "We keep asking the person who's reviewing the game if he or she is having fun."

Manley sums up the qualities Electronic Arts looks for in a game in three words: simple, hot, and deep. "Simple in that it's easy to learn, and you don't have to wade through a long manual; hot in that it uses the computer interactively—taking advantage of the computer's sound and graphics capabilities; and deep, in that you won't get bored really quickly—you want to keep playing it," explains Manley.

Peter Doctorow, **Accolade Inc.**'s vice president of design development, agrees that these criteria, especially the "simple" part, are important to a winning game. Doctorow looks for programs with short user manuals and prefers none at all.



Mindscape's popular game, *Infiltrator*, was designed by Chris Gray when he was 17.

Addictiveness is another key aspect in any great program. Sandy Schneider, vice president and creative director at **Mindscape** (the company that published Chris Gray's *Infiltrator* when he was 17), says that your friends' reactions can tell a lot about whether or not you have a winner on your hands. "If you hook them on something that you've created, you might as well send it to a publisher. Friends are pretty good indicators," she says.

Once you've fine-tuned and thoroughly debugged your masterpiece—and think it's ready to send off—study the publishers. It's important to know the types of programs each software company publishes. This way, you'll know where to target your work. Then, send away for the company's submission information and agreement. (Some publishers ask you to enclose a self-addressed, stamped envelope.) The information the publisher sends back can contain valuable clues to the kinds of programs the company is looking for, as well as any necessary instructions like language and machine requirements.

In most instances, you must fill out a submission agreement before you send a disk to a publisher for consideration. Some software publishers won't even look at your program unless you've done this. Completing a submission agreement is an important prerequisite because it can protect you and/or the software publisher if any legal conflict—such as copy infringement—should ever arise.

What happens after you send in your creation depends on the company, but generally, one or more reviewers will look at it. If it makes the cut, it goes "upstairs" to people like Manley, Doctorow, and Schneider, who help make the final decision about what is published. Even if they reject your program, some companies give you valuable feedback—in person, by phone, or by letter.

So even though the software business is filled with talented and successful programmers (some still in their teens), the prospects of being published aren't totally bleak. Keep working on your programming skills and don't become discouraged if you're not initially successful. "Try to be original and be persistent. Keep at it," advises Manley.

Keep working at it, and who knows? *Quavering Quasars* could be the next megabestseller.

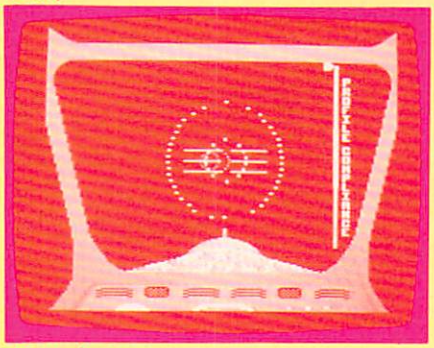
—KATHRYN BONN

STRATEGY

TIPS, TRICKS, AND HINTS

ALIENS

Activision. Arcade/Adventure. Your mission: Become the crew of the hit movie *Aliens*. Journey to planet LV-426 and eliminate aliens while attempting to keep your crew alive. *(The hints and game are for C 64/128.)*



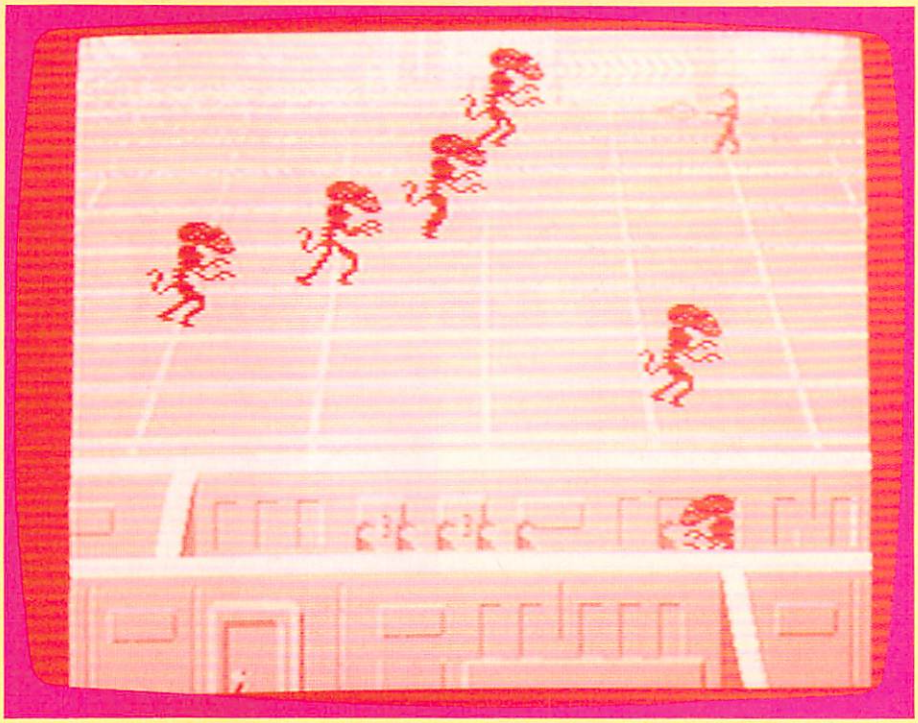
Keep alert.

On the drop-ship level, concentrate on the yellow rings. Looking at both the yellow and blue rings is too distracting and makes it difficult to negotiate sharp turns. Also, keep an eye on the smallest ring on the screen and try to steer toward it.

On the Armored Personnel Carrier (APC) rescue attempt, move back and forth in the center of the board with the button down, killing all the aliens in a given direction. Don't follow the manual's advice, which is to charge forward, guns blazing.

On the same level, aliens won't attack if your men are in a group. Keep your crew together and make individual mad dashes to the APC.

Dietrich didn't take the Special Ks' advice.

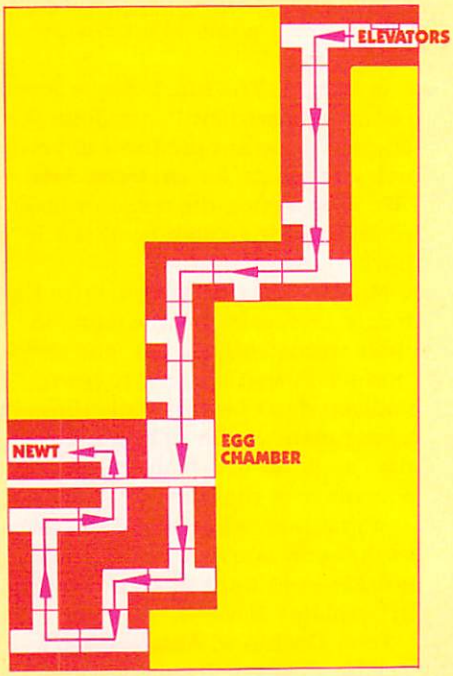


When you're hot, you're hot.

In the Operations Room Rampage, sustained fire will only give the creatures more time to slip by. Short bursts of fire allow you enough time to fend off the aliens. Beware! Slow-moving aliens are often decoys for faster-moving ones at the opposite end of the screen, so try to stay in the middle as much as possible.

In the Air Duct Maze, while rescuing Newt, follow the map directly to where she is being held. Flares will only waste time. If a screen has too many aliens, stay near the edge of the screen and toggle between screens with the joystick until there are fewer enemies.

In the final confrontation, trap the queen near the side of the screen and continue bouncing her against it until the bar turns completely green. Then hit her a few more times to make sure she'll stay stunned for awhile. Next, wait until she moves to the bottom of the screen. (Don't worry, she can't get you.) Then move your claw directly on top of her. Now simply grab her and dump her in deep space. Voilà!



This way to Newt.

MOONMIST

Infocom. Text adventure. Your mission: As a famous American detective, you must help your friend Tamara discover what or who is haunting her castle. *(The hints and game are for Amiga, Apple II series, Atari, Atari ST, C 64/128, IBM PC/PCjr & compatibles, Macintosh.)*

RED VERSION:

- Everyone seems to have something to say about the mysterious visitor.
- A trip to the basement could be most enlightening.
- Who knows where a trip to the library could lead you?
- You might be able to unearth a few clues in the garden.
- The family crest may lead to an arrest.

BLUE VERSION:

- The third clue is in a suitable place.
- Read Vivien's diary for some interesting facts.
- Does "fossil skull" seem to ring a bell?

GREEN VERSION:

- Mirrors can be very revealing.
- Don't overlook the rhino head.

YELLOW VERSION:

- The ghost's identity is most surprising!
- All this searching for the third clue has my ears ringing.
- Speaking of ears, maybe you could sneak a peek at that dashing earring Tamara has in her room.
- And let's not forget to search near the Drawing Room.

HINT HOTLINE

ULTIMA IV

Origin Systems (Amiga, Apple, Atari, Atari ST, C 64/128, IBM PC/PCjr & compatibles). Role-playing adventure. Your mission: Destroy evil in yourself and throughout the land.

- When the moon is new, search one space north of the Shrine of Sacrifice, and you will find the night shade.
- When you're on a horse and want to cross a river, use the whirlpool. Be sure to yell "Giddyap" before you cross.—GLEN ROBERTELLI, *11, Bloomfield, Michigan*; JAYSON HOGAN, *15, Seattle, Washington*

THE BARD'S TALE II

Electronic Arts (C 64/128). Graphic adventure. Your mission: Recover the seven shards of the Destiny Wand and become a Destiny Knight.

- To gain an infinite amount of gold, deposit money in the bank and remove the scenario disk. Then insert a copy of the scenario disk. Withdraw all of your gold, reinsert the original disk, and deposit gold. Remove the original disk, insert the copy, withdraw, reinsert original, deposit gold, remove original, insert copy, and withdraw. Repeat this until you have the Midas Touch.
- To gain an infinite amount of magical items, sell the magic items at the trading post. Then press ‹B›uy and remove original scenario disk. Insert a copy, purchase the magic item(s), remove the copy of the scenario disk, reinsert the original, buy, remove original disk, insert copy, purchase, and repeat the process until satisfied.—DELUX HUN, *15, Bellflower, California*

WACKY AND ZANY HIT GAME IDEAS

Way back when, we asked you to come up with a crazy idea for a hit computer game. If we remember correctly, we promised to pick three of the most outlandish responses, award the creators $10 apiece, and then print their ideas in the pages of FAMILY COMPUTING magazine. Well, we've kept our promise. Here are the three lucky—and very witty—winners, along with their game plots:

A PICKLE

By **Jon-Claude Gerow**, *16, Vero Beach, Florida*

Your mission (Get your tongues ready!): Peter Piper is in a pickled pepper plant. The pickled peppers are prepared and packed. Peter Piper must pick a peck of pickled peppers and take them to the patiently parked plane. But a mad, mutant pepper chases Peter Piper through plant-eating pickled peppers. This prevents Peter Piper from picking the proper peck of pickled peppers. Does Peter Piper get paranoid?? No! He eats a pink pickled pepper and pursues the mutant pickled pepper away from the pickled peppers. Paddle is preferred for perfect play. Whew! I'm purely pooped!!

GIRLFRIEND

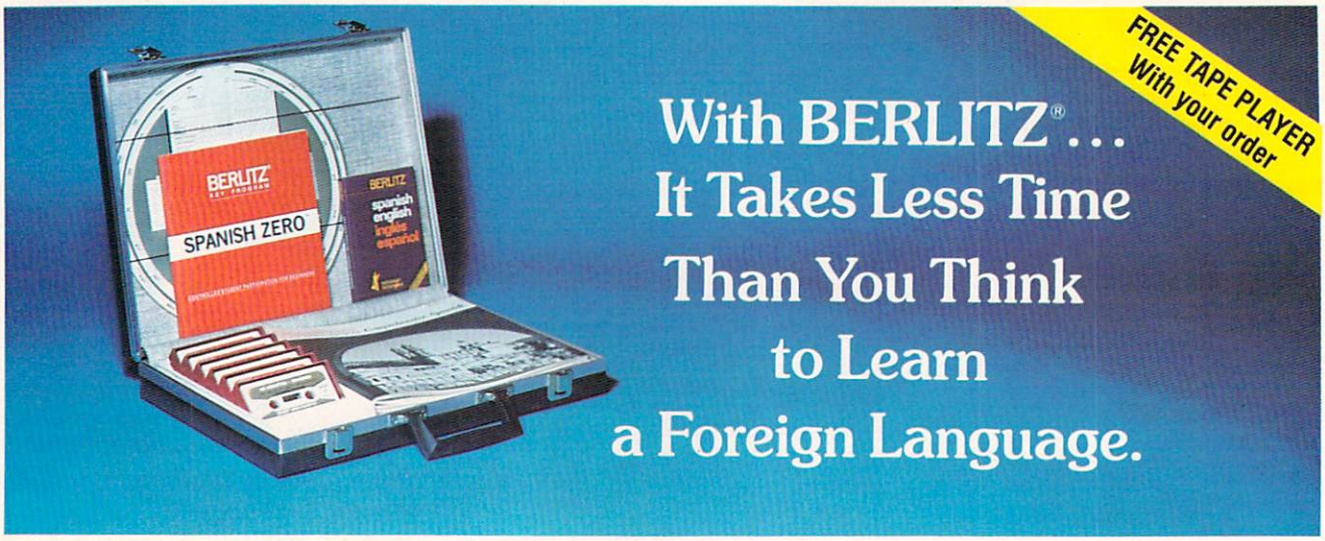
By **Nash Robinson**, *14, Colorado Springs, Colorado*

Your mission: Try to win over a new girlfriend with your wit and good nature, while avoiding large football players who are trying to steal her away from you.

TV NIGHTMARE

By **Scott Doudera**, *15, Alma, Illinois*

Your mission: To win, you must fight through seven levels of television shows. Levels include keeping the A Team from building an evil avocado-throwing device, finding and capturing Johnny Carson before he takes off for another two-month vacation, and using various weapons to keep Richard Dawson from kissing your family.



FREE TAPE PLAYER With your order

With BERLITZ®... It Takes Less Time Than You Think to Learn a Foreign Language.

Try The BERLITZ® Learn-At-Home Language Program for 21 Days... *RISK-FREE.*

Available in Spanish, French, German, and Italian Programs

The ease and effectiveness of this learn-at-home program should come as no surprise. It has been developed by the experts at BERLITZ, a name synonymous with excellence in language instruction.

Begin with the famous Berlitz ZERO™ exercises, so named because they start you "from zero" in your new language. You learn the same way you learned English, by listening and absorbing the language as it is used in everyday settings ... then repeating what you hear. In a short while, you'll even be thinking in your new language.

Perhaps you want to learn a foreign language to help yourself in your business career, or simply to get more enjoyment out of foreign travel. Whatever your reasons, you'll find the Berlitz Learn-At-Home program to be a fast, fun, and effortless way to learn the language of your choice.

If your company is not reimbursing you for this course, it is tax deductible if used for business purposes.

The program, which comes in a handsome briefcase, contains:

- The 10-lesson, 90-minute ZERO cassette to familiarize you with the spoken language. You begin speaking immediately.
- Forty additional lessons on five 60-minute cassettes to put your growing command of the language to work in a variety of real-life situations.
- Six illustrated workbooks to visually reinforce what you're hearing and explain the usage of the language you're learning.
- A pocket-size two-way dictionary that makes word-finding a snap – whether it's finding the English meaning of a foreign word or vice versa.
- The Berlitz Rotary Verb Finder that lets you instantly change any of four dozen common verbs into present, past or future tense.

Berlitz Money Back Guarantee

Try the Berlitz Learn-At-Home program for 21 days. If you are not satisfied for any reason, simply return the course and the tape player, and receive a complete refund.

FREE!

WITH YOUR ORDER

This Portable Stereo Cassette Player

- **4 Track 2 Channel Stereo**
- **Adjustable headset with cord**
- **Handy belt clip**
- **4⅜" x 3⅛" x 1⅛"**

(Batteries not included)

For your convenience on credit card orders dial toll-free

1-800-228-2028 Ext. 502

and ask for Dept.2317

24 hours a day. 7 days a week.

BERLITZ PUBLICATIONS, Inc. Dept.2317
866 Third Ave., 14th Fl., New York, NY 10022

Send **Berlitz Comprehensive Cassette Course(s)** checked.
$145.00 each in briefcase plus $7.50 for shipping and insured delivery.

☐ **French** 76100 ☐ **German** 76101 ☐ **Italian** 76102 ☐ **Spanish** 76103

☐ With my order, send me my FREE PORTABLE STEREO CASSETTE PLAYER 10001

Enclosed check_____ money order_____ payable to Berlitz.
Or charge my AMEX_____ Diners Club_____ VISA_____
MasterCard InterBank #_____ Exp. Date_____
Card #_____ Exp. Date_____
Name_____
Address_____
City_____ State_____ Zip_____
N.Y. and N.J. residents add sales tax.

the Programmer

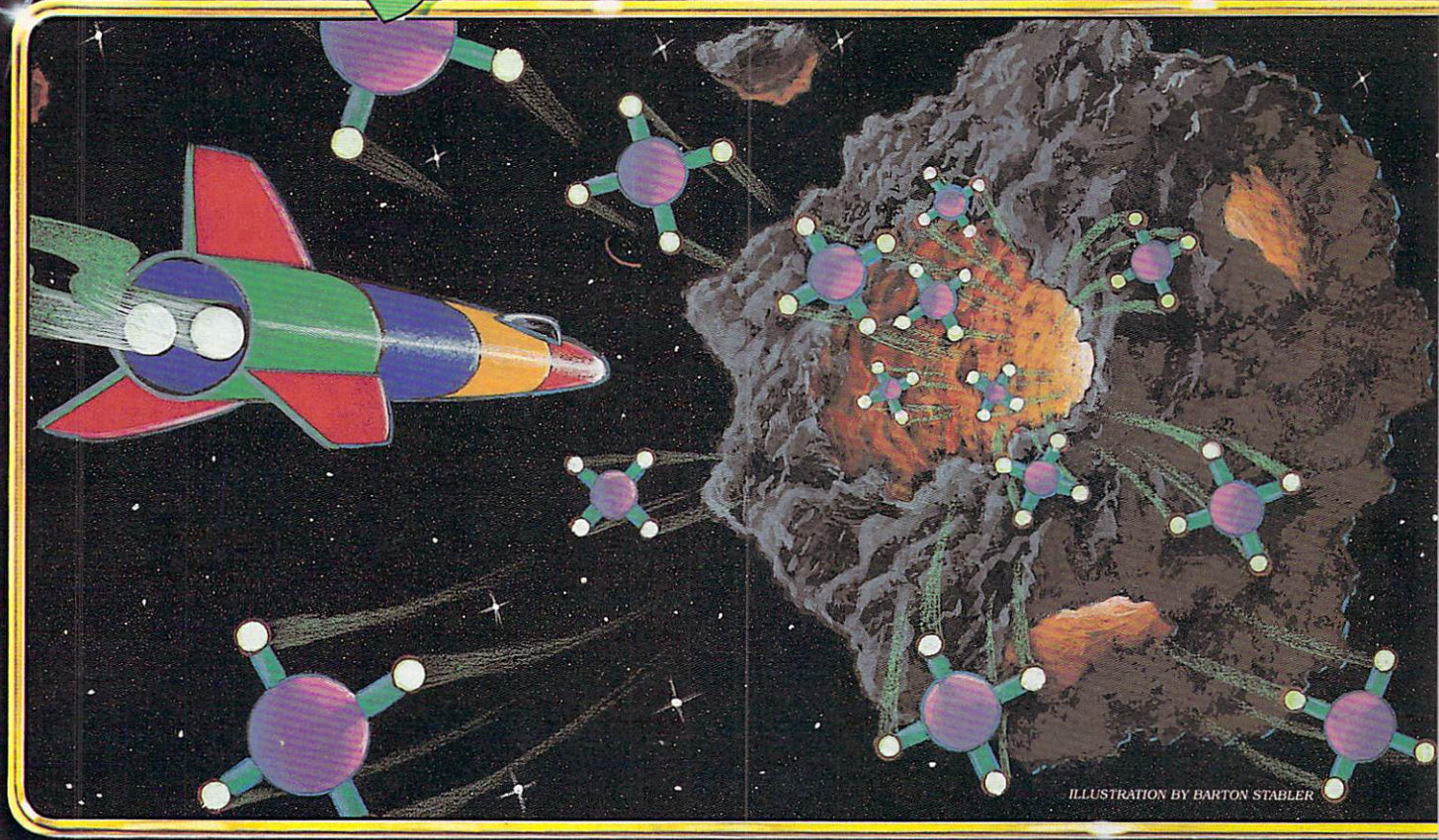


ILLUSTRATION BY BARTON STABLER

★ J U N E ★

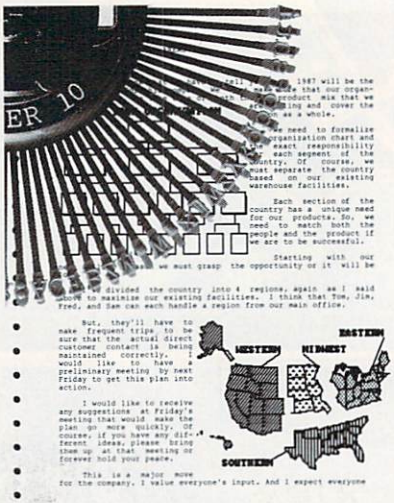
HOME HELPER PROGRAM
Page 66
Leave telephone messages and important reminders on our *Home Message Center* and you'll never have to scribble notes on scraps of paper again!

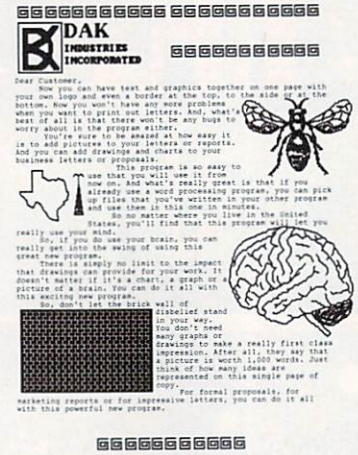
FUN-AND-GAMES PROGRAMS
Page 76
See if you can maneuver your ship to the core of abandoned mining asteroids in *Space Race*.

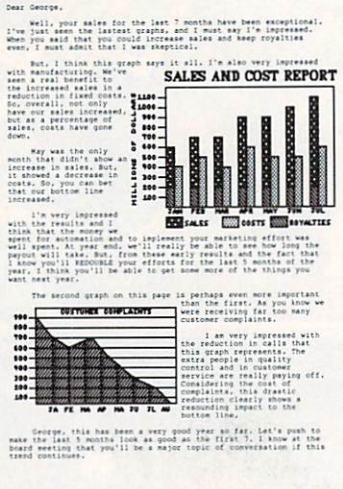
Page 80
Kanium Quest will send you on a search around the world for "The Unfound Compound."

TIPS TO THE TYPIST
Page 82
How to type in FAMILY COMPUTING's programs, and what to do if a program doesn't work.

ILLUSTRATION BY JAMES CHERRY III







For Daisy Wheel, Dot Matrix & Ink Jet Printers

$89.90 Desktop Publishing Breakthrough

Imagine using a word processing and drawing program that lets you integrate charts and pictures that you 'paint' or 'clip' into your text. Well, if you use an IBM PC or Clone, now you can have graphically dramatic documents, from business or personal letters, to proposals, to organization charts, even with a daisy wheel printer.

By Drew Kaplan

It's easy. It's impressive. And, now your thoughts can be powerfully illustrated in both words and graphics.

After all, for illustrating abstract data and thoughts, nothing beats a dramatic chart or drawing. So, let your ideas leap off the page by using integrated text and graphics. Your thoughts are sure to make an impressive impact.

Whether you write letters, bank proposals, term papers, company manuals or news letters, you can forget complicated and expensive laser printing. And, you can forget complicated expensive desktop publishing programs.

Now for just $89.90, you can use your daisy wheel, dot matrix or ink jet printer to print normal text. Plus, you can integrate simply fabulous graphs and drawings into your creations.

INCREDIBLY EASY

Savtek, a brain trust group, has developed an easy to use yet incredibly sophisticated integrated word processing and graphics program.

Just create your letters, proposals, or reports as you would with any other word processor. In fact, if you **already** have a document created in virtually any other word processor, you can 'grab' it into Savtek's instantly.

You'll produce visually powerful technical papers and manuals with drawings and charts, and dramatic marketing reports with graphs. You'll produce sales proposals with panache.

And since there's no complicated training needed (if you can run a word processor, you can run Savtek), you'll make great impressions, fast.

Anyway, once you've created the written part of your report, using Savtek's sophisticated automatic word processing features, you're ready to add pictures, charts and graphs.

Just select from the over 100 supplied changeable pictures or draw your own, using the automated ICON based drawing program.

Later, you'll learn much more about the sophisticated drawing program that lets you draw, paint, fill, expand, reduce, copy, and move your pictures.

And, you'll form squares, circles and triangles automatically. Anyone can draw with it because it's totally automated and uses arrow keys and doesn't require a mouse. But, read on.

Once you've selected a picture, the computer will produce an automatically sized box representing it. Just position the box wherever you want the picture to be in the text.

Like magic, the actual picture will appear and the text will automatically reformat itself around it.

And, speaking of reformatting, this program will automatically make page-breaks and recalculate each page as you write or edit. If you make an addition to page 1 of a 10 page report, the effect will ripple through all 10 pages.

So, whatever length you've chosen for each page (including headers, footers and automatic page numbering), will automatically be preserved.

You'll particularly like the cut and paste features of this word processing program which allow you to copy, move or delete sections of your text.

Of course, you'll have automatic Word-wrap, Hidden Hyphenation, Justified Smooth Right or Ragged Right text. Plus, you'll have Find, Replace and Search.

And look how you can format your document. There are 5 page templates called rulers which allow you to automatically set up your page.

You can select any right and/or left margins, your tabs, one, two or three line spacing, and the number of blank lines at the top and bottom of your page.

Each of the 5 rulers comes with different default settings. But, you can adjust and save them or change them and even use several at one time on a page.

HOW DO THE PRINTERS WORK?

I use a daisy wheel printer because I like my letters to look personal. I've always had to switch to a dot matrix printer for graphs and illustrations.

Unfortunately, I couldn't have my graphics on the same page as my text.

Now, because this program can use the period on the daisy wheel to create all the charts and graphic symbols you see within this ad, I don't need to switch printers any more.

And while it doesn't create the graphics as fast as a dot matrix, the quality is superb. Now my graphics can be impressively integrated into my text.

Note: Every single sample page shown in this ad, was printed out on my EXP 400 Silver Reed daisy wheel printer.

Note: This program does not produce two column news letters in a single action. Simply create a double length column and cut it when you have it printed.

No matter what printer you use, daisy wheel, dot matrix (with or without near letter quality printing) or ink jet (color or single color), you'll have powerful looking documents to really present your ideas in the most professional manner.

DESKTOP PUBLISHING

Desktop publishing is about the hottest category of computer programming. It seems that everyone has discovered the impact of combining text and graphics.

And **very** impressive presentations are just what Savtek's ETG Desktop publishing system provides for you.

Imagine leveraging the capabilities of your own IBM or Clone, your own printer and your own keyboard to produce the documents you see on these pages, with nothing else to buy.

THE 1000 WORD PICTURE

First a confession. I can't draw. That's why you don't see drawings in DAK's catalogs. But I've been amazed at how creative I can be with this paint program.

It's easy. You do everything with the arrow keys and the return key. By using the arrow keys you can draw in any direction with a choice of 12 brush shapes.

There's an erase function to eliminate anything you don't like. And here's my favorite function. UNDO is a function that works throughout this program.

. . .Next Page Please

. . .Publishing Continued

It simply removes the last thing you did. So, no matter what you do wrong, you're a button away from removing it.

If you don't want a solid line, just spray an area. It's like using a spray can.

Let's say you want to connect two points with a straight line. Use the Angle Line. It produces a computer generated straight line between any two points.

What if you want a circle? Just touch the return key. Then use the diagonal arrow key to enlarge or reduce the circle. If you use the up/down or right/left arrows, you'll get an ellipse.

In the same way you can create squares, rectangles or triangles. And you'll be amazed how many things, from houses to technical drawings, are made up of squares, rectangles, circles and triangles.

But, that's not all. You can choose any of 32 background patterns to fill in enclosed areas or broad lines. And if 32 isn't enough, you can design your own.

There's so much more. You can juggle a picture. Imagine, turning it over or sideways with the touch of a button.

You can copy or move a picture or even part of a picture right on the screen. So, draw it once and copy it or move it.

But, here's my favorite. You can enlarge or reduce any picture or part of a picture right on the screen. So you can change its size equally, or you can stretch it out or make it tall and thin. Wow!

There are 12 included font/sizes. So you can have large or small type in your choice of styles within a picture or integrated with your text.

And, each of the 12 font/sizes can be shown on the screen and printed normally, in bold, in italic, in outline, or in shadow. Plus, you can write normally across the page, up the page, down the page or upside down.

Finally, you can zoom into any small section of the screen and edit your pictures, pixel by pixel. With this kind of power, you don't need to be an artist, just have the ability to push a button.

You can operate this Paint program independently. Or, you can access any picture from within word processing.

So, for banners and pictures, you can print directly from the Paint Program. Or, for everything previously described, simply access your pictures, captions, graphs or charts through the desktop publishing section.

This program is incredibly powerful, yet you'll be comfortable using it within just a few hours.

Every picture in this ad was created with this program. And, you haven't even seen the tip of the iceberg of its capabilities. For example, if you have a picture on the screen, you can bring a second picture up and join them together.

WHO CAN USE THE SYSTEM

All you need is an IBM PC, AT, XT or 100% compatible with standard IBM CGA or EGA graphics capability. It must have at least 256K, and either two floppy disk drives or one floppy and a hard disk.

Below is a list of some of the dot matrix, ink jet and daisy wheel printers that have been tested with this program. If your printer is compatible with any of these printers, it should work too.

Special Note: Most daisy wheel printers are Diablo 620/630 compatible, so they will work with this program.

Special Note: With a color printer you can print 3 colors plus black text.

C.Itoh 8510, **Epson** Fx-80, FX-85, FX-185, JX-80 (color), LQ-800, LQ1500, LX80, MX80 with Graftrex Plus or Graftrax, RX-80, **Hewlett Packard** 2225C Think Jet or QuietJet, LaserJet, or LaserJet Plus, **IBM** 80CPS Graphics Printer, IBM Proprinter, IBM 3852 Jetprinter (color), **Juki** 6100, **Mannesmann** Tally Spirit 80, **NEC** 3500, 3510, 3520, 3530, 3550, 5500 series, 8023A, NEC Pinwriter P5XL, P6, P7, (single or color), **OKIDATA** Microline 92, ML92, w/IBM Plug & Play, Microline 193, 20 (color), **Panasonic** KX-P1091, KX-P1091i, **Quadram** Quadjet (color), **Radio Shack** DMP-200, **Silver Reed** EXP 400, 600, 800 and all EXP series, **Star Micronics** SG-10, **Texas Instruments** 855, 865, **Xerox** (Diablo) 620, 630.

FINAL FACTS

There's a pop down calculator which lets you deposit your results right into your text. A clock/timer picks up the time from your computer, and there's a 7,300 year calendar. They are all available as pop-down windows. Savtek's program is backed by a standard limited software warranty /license. It comes with a superb, easy to use reference manual.

DESKTOP PUBLISHING FOR YOU RISK FREE

Make your ideas explode in front of your readers. When you send out a letter or proposal, let it be really dramatic. They will be your ideas, but you'll be presenting them like never before.

If you're not 100% satisfied, simply return it in unused condition within 30 days for a courteous refund.

To order Savtek's ETG Integrated Word Processing and Graphics Desktop Publishing System for your IBM PC or Clone, call toll free or send your check for the breakthrough price of just **$89.90** ($4 P&H) Order No. 4801. CA add tax.

Look at the 12 sample pages I created. You'll see graphs, pictures and charts mixed into my text. I even designed a logo for my newsletter. Just think about the impact you'll make when you present your ideas with a combination of text and graphics. And oh, it's so incredibly easy to use.

IBM is a registered trademark of International Business Machines.

DAK INDUSTRIES INC.

Call Toll Free For Credit Card Orders Only
24 Hours A Day 7 Days A Week

FC65 **1-800-325-0800**

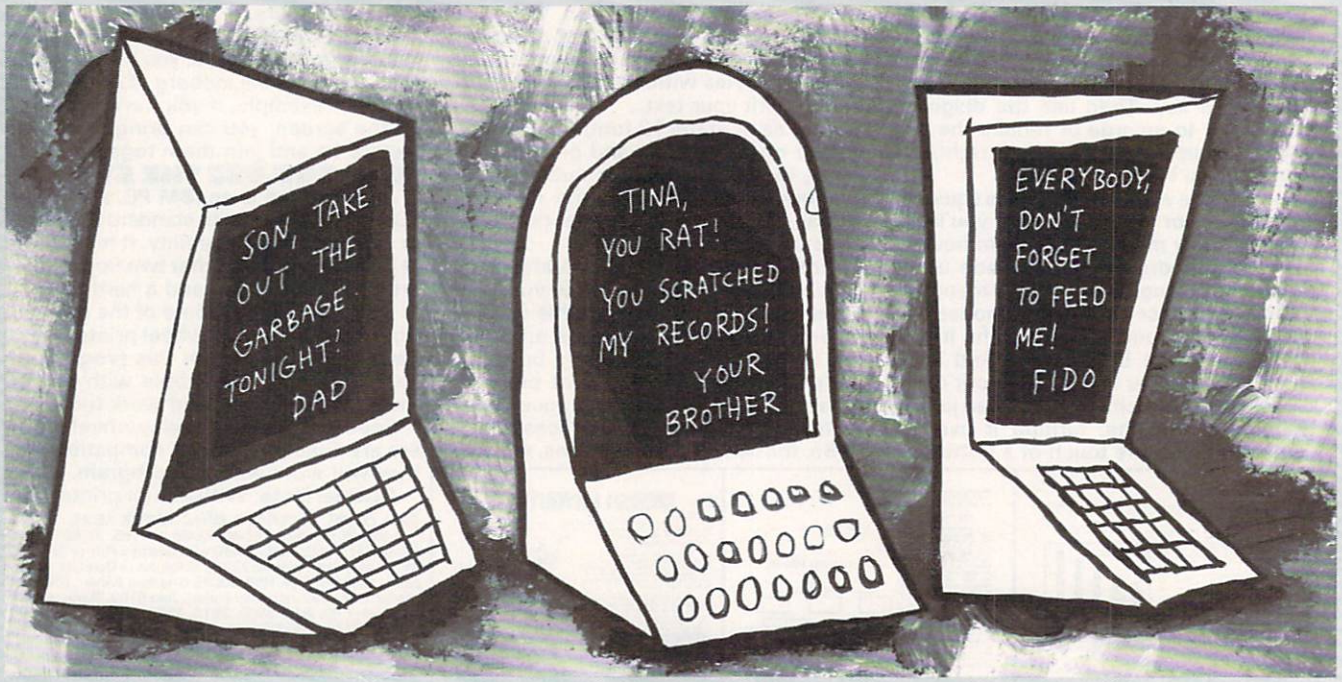
For Toll Free Information, Call 6AM-5PM Monday-Friday PST

Technical Information. . . . 1-800-272-3200
Any Other Inquiries. 1-800-423-2866
8200 Remmet Ave., Canoga Park, CA 91304

I NEVER GOT THE MESSAGE

Use *Home Message Center* and Never Miss Another Call

BY PASQUALE M. CIRULLO



When I think back to my childhood summers in Brooklyn, New York, I remember always being out of the house—and missing many phone calls and messages from friends and family members. Answering machines solved some of the problem but they didn't help if a human answered the phone. My sisters would put messages for me on the refrigerator door—if they remembered—but the slips of paper would usually fall off before I saw them.

Our bulletin board-on-a-computer, *Home Message Center*, solves this problem. It keeps all the family members' messages organized and safe . . . and you can bet they'll never fall on the floor.

USING *HOME MESSAGE CENTER*

When you run *Home Message Center*, the names of the people with pending messages will scroll up the screen. (This continuous scrolling will prevent damage to your monitor so you can keep the program running all day.) Just press any key on the keyboard to stop the scrolling and use the program's other options.

When the program detects that you pressed a key, it will ask you for your name. Be careful how you type in your name, because the computer will sign messages you leave for others with this name, and use it to determine whether you have any messages. For example, if you sign in as "Billy", you won't be able to read messages left for "Bill".

The program will then list a short description for each message that is addressed to you, including the addresser's name, what the message is about, and when it was left. At the bottom of the screen you'll see the four commands you can choose from: ‹S›tart, ‹R›ead, ‹W›rite, and ‹Q›uit. To give a command, simply type its first letter (no need to press RETURN or ENTER). For example, to Write a message, just press the W key.

‹S›TART

This command tells the computer to go back to the beginning of the program and resume scrolling the names of the people who have messages pending. Choose this command when you have finished reading and writing messages and you want to leave the program running for others to use.

‹R›EAD

If you choose ‹R›ead, the computer asks you which message you want to read. Enter the number that appears before the message and press RETURN or ENTER. The program will then display the message and ask you if you want to delete it. By answering "Yes" to the question, the computer will permanently delete that message. Answer "Yes" for messages that you are sure you want to delete. If a message is left for more than one person to read, only the individual who left the message can delete it. This prevents someone from inadvertently deleting the message before everyone has read it. Once you've pressed Y or N, you return to the list of pending messages.

‹W›RITE

When you tell the computer you want to ‹W›rite a message, the program will go to the Write screen. Start by filling in the addressee's name, what the message REgards, the date, and the time. Your name will automatically be filled into the "From" line. (The version for IBM PC and compatibles will automatically fill in the Date and Time lines for you; the Commodore 64 version will fill in the Time line only. Make sure the computer's internal clock is set correctly before beginning the program!) To leave a message for more than one person to read, enter ALL on the "To" line.

Once the computer has this information, it will ask you for the message. The message can be no longer than 10 lines, with no more than 30 characters per line. (The Tandy

ILLUSTRATION BY JOSH GOSFIELD

ITS

ITS TEK-NET-BBS (703) 690-7462

Visa, MC, CHOICE, AE
Leasing, Renting &
Financing available

Open 7 days a week

(703) 847-4740 (800) 642-2395

Information and Technology Services, Inc.

Micro Systems Specialists

8478A Tyco Rd., Vienna, VA 22180

"Serving the Nation's Capitol and the World"

Drives

20 MB SEAGATE 65MS	$379
30 MB SEAGATE RLL	$479
20 MB ST4026 AT	$573
30 MB ST4038 AT	$651
40 MB ST4051 AT	$792
80 MB ST4096 AT	$1273
40 MB PRIAM XT	$1395
60 MB PRIAM XT	$1450
40 MB PRIAM AT	$1175
60 MB PRIAM AT	$1350
BERNOULLI DUAL 10	$1839
BERNOULLI DUAL 20	$2494
20MB PLUS HARDCARD	$695
20MB MAYNARD HCARD	$759
ISI WORM 220MB INT.	$2995
60MB ARCHIVE TAPE	$740
60MB ARCH. EXT. TAPE	$740
60MB GENOA TAPE	$935
60MB SYSGEN	$1089
TOSHIBA 3.5 DRIVE	$150
*TOSHIBA 5.25 EXT.	$349
FUJITSU 360 K DRIVE	$89

Laser Printers

CANON A1	$2095
CANON A2	$3085
HP LASERJET	$2295
QMS KISS	$1995
XEROX 4045	$CALL

Printers

NEC P-6	$465
NEC P-7	$670
NEC P-5	$1107
NEC P-5XL	$1230
PANASONIC 1080 I	$220
PANASONIC 1091 I	$284
PANASONIC 1092	$345
PANASONIC 1592	$465
STAR LV 1210	$174
STAR NX-15	$368
STAR ND-15	$430
STAR NR-15	$522
STAR NB 24-15	$684
STAR SD-10	$340
STAR NX-10	$240
BROTHER 1509	$425
CITIZEN MSP-10	$305
CITIZEN MSP-15	$420
CITIZEN PREMIER 35	$470
TOSHIBA P341	$820
TOSHIBA P351	$1212
FUJITSU DLP24	$1224
FUJITSU DM91	$398
OKIDATA M182	$264
OKIDATA M192+	$397
OKIDATA M193+	$598
OKIDATA M84	$698
OKIDATA 2410	$1961
EPSON FX-286	$609
EPSON LX-80	$270
EPSON FX-85	$419
EPSON LQ-800	$616

$

Memory Boards

JRAM 2	$129
JRAM 3 ABOVEBOARD	$179
JRAM AT	$179
JRAM AT3 ABOVEBOARD	$239
JLASER MODULE	$265
JLASER+	AVAIL.
INTEL ABOVEBOARD	$438
AST RAMPAGE 512K	$485
ORCHID CRAMRAM	$291
ZUCKER BOARD	$68
AST 6 PAK+W/384	$210
QUADBOARD W/384	$199

Chips

64K 150ns set of 9	$8
64K 120ns set of 9	$9
256K/150ns set of 9	$23
256K/120ns set of 9	$25
64 × 4	$4
128K Piggyback	$5
8087-3	$119
8087-8	$169
80287 6MHz	$192
80287 8MHz	$306

"Editor's Choice"
PC MAGAZINE
OCT. 14, 1986

The ITS Turbo XT from Information and Technology Services is our "best buy" recommendation

$849.00 complete

with 20MB and 1 floppy **$1157**

ITS Turbo XT

1 year warranty
30 day money back guarantee

IBM® PC Compatible

ITS TURBO 286 AT

$1195.00

- Phoenix ROM BIOS
- Full one year warranty
- 80286 CPU switch selectable 6 or 8 Mhz (10 Mhz optional)
- 1.2 MB Floppy Disk Drive
- Supports up to 5 internal ½ HT drives
- 2 serial/1 parallel ports built into chassis
- real time clock • 8 expansion slots

and many more features

- 6/10 Mhz optional $1295

PANASONIC BUSINESS PARTNER

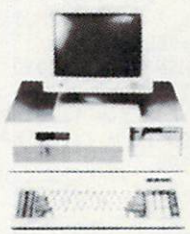
FX-600 2DS/DD, 640K
$895
with 1 DS/DD, 20 MB
$1145
(Monitor and Adapter extra)

PRICING SENSATIONS!

20 MB SEAGATE DRIVE	$379
30 MB SEAGATE DRIVE	$479
SAMSUNG AMBER MONITOR	$79
NEW ENHANCED KEYBOARD	$79
MONO GRAPHICS CARD	$90

OTHER SYSTEMS

BIOS AT 8Mhz	$1769
SPERRY MICRO IT	$1795
IBM XT	$1195
IBM AT	$2395
1800+ AT (EVEREX)	$1195



ITS SYSTEM 386

BLACKHAWK

Features:

- INTEL 80386 CPU and support circuits
- INTEL designed motherboard
- Phoenix BIOS
- 18 Mhz clock speed
- PC/AT compatible 8 Mhz switchable from keyboard
- 512K RAM standard up to 14 megabytes
- Parallel/Serial/Clock
- 8 Slot Expansion bus interface
  2-PC Compatible 8 bit bus connectors
  2-32 bit bus connectors
- Hard disk/Floppy disk controller
- 1.2 megabyte floppy

Available now
$3995.00

LAPTOPS and ACCESSORIES

Toshiba T1100 w/640	$1745
Toshiba 3800	$3395
Sharp PC 7000	$995
NEC Multispeed	CALL
Zenith 181	CALL
Panasonic Exec. Partner	CALL
Centronics GLP II Printer	$215
Toshiba Ext. Drive	$349
Toshiba 1200 Modem	$336

NOVELL NETWORKING DESIGN & INSTALLATION

- Prices subject to change 1/16/87
- 10% re-stock fee on all items
- Software non-returnable if opened
- No surcharge on VISA, MC, CHOICE...AE 3%

SPERRY

PC/IT

Superior to the IBM AT
Rated 8.8 by InfoWorld

44MB, 28ms Access Hard Drive
3 Speed Processor
Free 8 MHz Math Coprocessor
1.2MB Floppy, 640K Ram
2 Serial/1 Parallel Ports
Clock/Calendar, AT Keyboard
DOS 3.1 Basic, System Guide

$2,695.00 1 year warranty

Color Computer version will allow messages that are 7 lines long with 25 characters per line.) Press RETURN or ENTER at the beginning of a blank line when you are finished with the message.

If you make a mistake, you can use the BACKSPACE key (CTRL-B on the Apple II or DELETE on the C 64) to backspace over the line to make your corrections, or you can edit the message before it is "mailed".

After you've typed in the message, the program will ask if you want to ‹M›ail the message, ‹E›dit the message, or ‹A›bort. Abort will erase the message from the computer's memory. Edit will give you a chance to change any part of the heading or the message itself. When you choose Mail, the computer will "send" the message to the *Home Message Center* for the addressee to see and to read.

When you have finished writing your message, the program returns you to the list of pending messages.

‹Q›UIT

This command will tell the computer to end the *Home Message Center* program. The computer will first save all the pending messages onto your disk and then return you to BASIC. This command should be used only when you want to turn the computer off or use it for another program.

Apple II series w/ disk drive/*Home Message Center*

```
10 DIM H$(120),MC$(120,15),S$(5),C(15),L(15)
20 DIM P(120),R(15):HOME:Q$ = CHR$(34):SL$ = CHR$(32)
30 FOR X = 2 TO 39:SL$ = SL$+CHR$(32):NEXT X
40 UL$ = CHR$(95):FOR X = 2 TO 40:UL$ = UL$+CHR$(95)
50 NEXT X:BL$ = SL$+CHR$(32):D$ = CHR$(4)
60 F$ = "MESSAGE.DAT":M = 1:NM = 0
70 FOR X = 1 TO 15:READ R(X),C(X),L(X):NEXT X
80 FOR X = 1 TO 5:READ S$(X):NEXT X
90 DA$ = "L":ONERR GOTO 2000
100 PRINT D$;"OPEN";F$:PRINT D$;"READ";F$:INPUT NM
110 FOR X = 1 TO NM:FOR Y = 1 TO 15:INPUT MC$(X,Y)
120 NEXT Y:NEXT X:PRINT D$;"CLOSE";F$
130 POKE 216,0:IF NM < 1 THEN NM = 0:GOTO 200
140 H$(1) = MC$(1,1):NP = 1
150 FOR X = 2 TO NM:FL = 0:FOR Y = 1 TO NP
160 IF MC$(X,1) = H$(Y) THEN FL = 1:Y = NP
170 NEXT Y:IF FL = 1 THEN 190
180 NP = NP+1:H$(NP) = MC$(X,1)
190 NEXT X
200 HOME:POKE -16368,0:FL = 0:G = 0:IF NM > 0 THEN 250
210 PRINT:PRINT "THERE ARE NO MESSAGES."
220 FOR D = 1 TO 400:NEXT D
230 IF PEEK(-16384) < 128 THEN 210
240 GOTO 290
250 FOR X = 1 TO NP:PRINT H$(X):PRINT
260 IF PEEK(-16384) > 127 THEN X = NP:FL = 1
270 FOR D = 1 TO 400:NEXT D:NEXT X
280 IF FL = 0 THEN 250
290 PRINT:INPUT "WHAT IS YOUR NAME? ";T$
300 IF T$ = "" THEN 290
310 GOSUB 7000:NA$ = Z$
320 IF LEN(NA$) > 15 THEN NA$ = LEFT$(NA$,15)
330 HOME:M = 0:FOR X = G+1 TO NM
340 IF NA$ <> MC$(X,1) AND MC$(X,1) <> "ALL" THEN 390
350 M = M+1:IF M < 6 THEN 380
360 M = 5:X = NM:VTAB 22:HTAB 1
370 PRINT "CHOOSE <N>EXT SET OF MESSAGES OR";:GOTO 390
380 P(M) = X:PRINT M;:GOSUB 3000
390 NEXT X:PRINT:IF M <> 0 THEN 420
400 VTAB 13:HTAB 1
410 PRINT "YOU DO NOT HAVE ANY MESSAGES."
420 VTAB 23:HTAB 1:PRINT BL$;:VTAB 24:HTAB 1
430 PRINT "<S>TART, <R>EAD, <W>RITE, <Q>UIT";
440 VTAB 23:HTAB 1:PRINT "COMMAND: ";:GOSUB 5000
450 PRINT Z$;
460 IF M = 5 AND Z$ = "N" THEN G = P(5):GOTO 330
470 E = 0:FOR Z = 1 TO 4
480 IF MID$("SRWQ",Z,1) = Z$ THEN E = Z:Z = 4
490 NEXT Z:ON E GOTO 130,500,660,990:GOTO 420
500 IF M = 0 THEN 400
510 VTAB 22:HTAB 1:PRINT BL$;BL$;SL$;:VTAB 22:HTAB 1
520 INPUT "WHICH MESSAGE DO YOU WANT TO READ? ";V$
530 V = VAL(V$):IF V > M OR V = 0 THEN 510
540 HOME:X = P(V):GOSUB 3000
550 FOR Y = 6 TO 15:PRINT MC$(X,Y):NEXT Y
560 IF MC$(X,1) = "ALL" AND MC$(X,2) <> NA$ THEN 650
570 VTAB 22:HTAB 1:PRINT BL$;:VTAB 22:HTAB 1
580 INPUT "DO YOU WANT TO DELETE THIS MESSAGE? ";T$
590 GOSUB 7000:IF Z$ <> "Y" AND Z$ <> "N" THEN 570
600 IF Z$ = "N" THEN 330
610 IF X = NM THEN 970
620 FOR Z = X TO NM-1:FOR Y = 1 TO 15
630 MC$(Z,Y) = MC$(Z+1,Y):NEXT Y:NEXT Z
640 NM = NM-1:GOTO 330
650 VTAB 23:HTAB 1:GOSUB 4000:GOTO 330
660 HOME:IF NM < 120 THEN 700
670 PRINT "THERE IS NO ROOM FOR ANY MORE MESSAGES."
680 PRINT "SOME MESSAGES MUST BE DELETED BEFORE"
690 PRINT "CONTINUING.":GOSUB 4000:GOTO 330
700 NM = NM+1:MC$(NM,2) = NA$
710 FOR Z = 1 TO 5:VTAB R(Z):HTAB C(Z)-6:PRINT S$(Z);
720 NEXT Z:VTAB R(2):HTAB C(2):PRINT MC$(NM,2);
730 FOR X = 1 TO 5:IF X = 2 THEN 780
740 R = R(X):C = C(X):L = L(X):GOSUB 6000
750 IF X = 1 AND T$ = "" THEN 740
760 IF X = 1 THEN GOSUB 7000:T$ = Z$
770 MC$(NM,X) = T$
780 NEXT X:FOR Z = 6 TO 15:VTAB R(Z):HTAB C(Z)-3
790 PRINT RIGHT$(STR$(Z-6),1);": ";:R = R(Z):C = C(Z)
800 L = L(Z):GOSUB 6000:MC$(NM,Z) = T$
810 IF T$ = "" THEN Z = 15
820 NEXT Z
830 VTAB 20:HTAB 1:PRINT BL$;:VTAB 20:HTAB 1
840 PRINT "<M>AIL, <E>DIT, OR <A>BORT: ";
850 GOSUB 5000:PRINT Z$
860 FOR Z = 1 TO 3
870 IF MID$("MEA",Z,1) = Z$ THEN E = Z:Z = 3
880 NEXT Z:ON E GOTO 330,890,970:GOTO 830
890 VTAB 20:HTAB 1:PRINT BL$;:VTAB 20:HTAB 1
900 PRINT "<T>O, <R>E, <D>ATE, <H>OURS, <0 - 9>: ";
910 GOSUB 5000:PRINT Z$:X = 0:FOR Z = 1 TO 15
920 IF MID$("TFRDH0123456789",Z,1) = Z$ THEN X = Z:Z =
 15
930 NEXT Z:IF X = 0 OR X = 2 THEN 890
940 IF X < 6 THEN 960
950 VTAB R(X):HTAB C(X)-3:PRINT Z$;":";
960 R = R(X):C = C(X):L = L(X):GOSUB 6000:GOTO 830
970 FOR Z = 1 TO 15:MC$(NM,Z) = "":NEXT Z:NM = NM-1
980 GOTO 330
990 DA$ = "S":PRINT:ONERR GOTO 2000
1000 PRINT D$;"OPEN";F$:PRINT D$;"WRITE";F$:PRINT NM
1010 FOR X = 1 TO NM:FOR Y = 1 TO 15
1020 PRINT Q$;MC$(X,Y);Q$:NEXT Y:NEXT X
1030 PRINT D$;"CLOSE";F$:POKE 216,0:HOME:END
1999 REM --ERROR ROUTINES--
2000 EN = PEEK(222):POKE 216,0
2010 IF EN = 5 OR EN = 6 THEN 200
2020 PRINT "I/O ERROR. CHECK DISK AND DISK DRIVE."
2030 GOSUB 4000:ON (DA$ = "L") GOTO 90:GOTO 990
2999 REM --PRINT MESSAGE HEAD--
3000 PRINT " TO: ";MC$(X,1);"  FROM: ";MC$(X,2)
3010 PRINT " RE: ";MC$(X,3)
3020 PRINT " DATE: ";MC$(X,4);"  TIME: ";MC$(X,5)
3030 PRINT:RETURN
3999 REM --INPUT SUBROUTINE--
4000 PRINT "PRESS ANY KEY TO CONTINUE.";
5000 Z = PEEK(-16384)-128:IF Z < 0 THEN 5000
5010 POKE -16368,0
5020 Z$ = CHR$(Z-32*(Z > 96)*(Z < 123)):RETURN
```

10 MHz IBM® XT Compatible Computer System Sale

Complete System for Only

$599.00

COMPUTER DIRECT

22292 N. Pepper Road, Barrington, Ill. 60010

"The Computer Experts"

Call (312) 382-5050 or 382-5244 for Free Catalogs of Over 1000 Programs & Accesories

Best Service • Best Price • 1000 Programs • 500 Accessories • 15 Day Free Trial

BEST GUARANTEE

FREE CATALOGS

10 MHz Super Turbo IBM® XT Compatible Computer System

Twice the speed* at just a fraction of the cost!

* Computes over two times faster than the IBM® XT

Run 1000's of IBM® software programs available.

Look at all you get for only $599.00

15 Day Free Trial

90 Day Replacement Policy

Double 90 Day Policy On Computer

This computer system is sold as a complete unit, NO SUBSTITUTIONS are allowed.

The complete system	List Price	Sale Price
10 MHz Super Turbo XT Computer	$1295.00	$499.00
* 512K Memory	$99.95	No extra cost
* Single floppy disk drive	$129.95	No extra cost
* Parallel printer port	$59.95	No extra cost
* Serial printer port	$59.95	No extra cost
* Mouse/joystick port	$59.95	No extra cost
* RGB color graphics port	$99.95	No extra cost
* Hercules compatible monochrome port	$79.95	No extra cost
MS DOS 3.2 & GW Basic	$199.00	$99.00
12" Hi-Res 35 MHz Green Screen Monitor (TTL & EGA compatible)	$249.00	$99.00
Monitor interface cable	$24.95	$19.95
Big Blue Printer	$199.00	$39.95
RS 232 IBM to Big Blue cable	$19.95	$9.95
2 rolls of paper	$19.95	$5.95
Word First • Word Processor	$99.00	$39.95
Data First • Data Base	$99.00	$39.95
Calc First • Spreadsheet	$99.00	$39.95
Total price when bought separately	$2893.85	$892.45

* Built-in the Super Turbo XT

Home & Business

This IBM® XT compatible is perfect for your home and/or business uses. It makes life easier in more ways than you can imagine. Use the system for personal letters, form letters, address storage, listing valuables, figuring finances, school reports, business reports, calculations, business projections...the list can go on and on. With the addition of some of the thousands of software programs available for IBM® you can increase the capabilities of your system even further. A terrific home improvement, business enhancer, entertainment center & educational aid!

Save over $275.00 off sale prices!

Complete System only $599

IBM® is the trademark of International Business Machines Inc.

VISA - MASTERCARD - C.O.D. **Shipping, Handling & Insurance Charges and Information** VISA - MASTERCARD - C.O.D.

Add $35.00 for shipping, handling and insurance. Illinois residents please add 6½% sales tax. Add $70.00 for CANADA, PUERTO RICO, HAWAII, ALASKA and APO-FPO. All orders must be in U.S. dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA & PUERTO RICO. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice. Please call for C.O.D. charges.

CALL COMPUTER DIRECT AT (312) 382-5050 or 382-5244

8am - 8pm CST Weekdays / 9am - 12 noon Saturdays

MasterCard VISA

CIRCLE READER SERVICE 37

SALE • *Famous National Brand* **• SAVE**

NLQ 180
Hi-Speed Printer Sale

• 160 - 180 CPS • Near Letter Quality •
Lifetime Warranty*

Price Break Thru

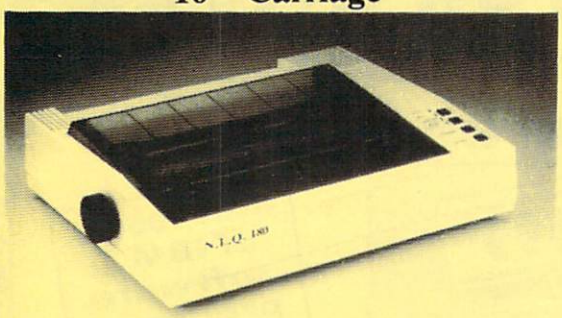
Sale $199.00

List $499.95

Below Wholesale Cost Prices!

60% OFF LIST PRICE

10" Carriage



NLQ-180 Premium Quality Printer

Near Letter Quality Selectable From Front Panel Controls • High Speed Dot Matrix• Letter Quality Modes • 8K Buffer frees up computer 4-times faster • Pica, Elite, Italics, Condensed • Super Graphics • Business or Personal • Tractor/Friction • 15 Day Free Trial • Lifetime Warranty on Print Head* • 6 Month Immediate Replacement Policy •

NEW

All New up Front Panel Controls

Fantastic Graphics

Easy to Use

Fantastic Price

Sale

NLQ-180 Print Samples

```
This is an example of ITALICS
Enhanced    Boldface
Condensed Text    Double-strike
example of Near Letter Quality
```

—— APPLE — ATARI — EPSON —— NLQ180 SPECIFICATIONS —— IBM — COMMODORE — ETC. ——

Print Buffer
8K bytes utility buffer
Printing Direction
Text Mode — Bi-directional
Graphic Mode — Uni-directional
Interface
Centronics Parallel Port
Paper
Plain paper, Roll paper, Single sheet Fanfold, Multipart paper: max. 3 sheets (original plus 2 copies)
Character Fonts
Pica, Elite, Italics, Condensed

Printing Method
Impact dot matrix
Printing Speed
160-180 CPS at standard character printing
Printing Characters
Standard 9 x 9 dot matrix
NLQ 12 x 18 dot matrix (33cps)
Character size: 2.12 x 2.8 mm (standard)
Character sets: Full ASCII character set (96)
32 International characters

Ink Ribbon Cartridge
Ribbon Life: 3 million characters/cartridge
Physical Dimensions
Size: 15" x 12" x 5"
Weight: 12.7 lbs.
Maximum Number of Characters

Standard:	10 cpi	80 cpl
Standard enlarged:	5 cpi	40 cpl
Elite:	12 cpi	96 cpl
Elite enlarged:	6 cpi	48 cpl
Condensed:	17 cpi	132 cpl
Condensed enlarged:	8.5 cpi	66 cpl
Condensed elite:	20 cpi	160 cpl

INTERFACES

Atari $39.95 Apple II $44.95 Commodore $29.95 IBM $24.95 Laser 128 $19.95 Macintosh $49.95

Shipping, Handling & Insurance Charges
Add $10.00 for shipping, handling, and insurance. Illinois residents please add 6½% sales tax. Add $20.00 for ALASKA, CANADA, HAWAII, PUERTO RICO & APO-FPO orders. All orders must be in U.S. Dollars. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA & PUERTO RICO. Enclose cashier check, money order or personal check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice.
VISA — MASTER CARD — C.O.D. Call For C.O.D. Charges.

COMPUTER DIRECT
22292 N. Pepper Rd., Barrington, Illinois 60010
Call (312) 382-5050 or 382-5244
To Order *We Love Our Customers*

CIRCLE READER SERVICE 38

Complete Apple® Compatible
Word Processing System

• 15 Day Free Trial • 90 Day Immediate Replacement Policy •

Home • Business • School • Word Processing

Look At All You Get for only $499.00

This computer system is sold as a complete unit, NO SUBSTITUTIONS are allowed.

		List Price	Sale Price
1	Laser 128 Apple Compatible Computer	$499.00	$395.00
2	Big Blue Printer	199.00	39.95
3	12" 35 MHz Hi-Resolution Monitor	229.95	99.00
4	Magic Window IIe wordprocessor	150.00	49.95
5	Magicalc Spreadsheet	150.00	49.95
6	Magic Memory Data Base	60.00	39.95
7	Laser 128 Big Blue Printer Interface	19.95	12.95
8	2 Rolls of Heat Transfer Paper	19.95	5.95
	Comparable Apple System ($2495.00)	$1327.85	**$692.70**

Save Over $700.00 Off List Prices

All 8 Pieces Only $499

Magic Window IIe: Word processing is easy and more efficient because of a simple-to-read menu system and editing commands. Many powerful features of professional quality programs and more. Supports virtually all major printer functions. Operates with most 80 column video cards or 40/70 column no-hardware modes.

Magicalc: Rated as the best electronic spreadsheet on the market for Apple. The speed with which Magicalc solves number problems allows you to accurately analyze decisions beforehand. Supports multiple RAM cards of most manufacturers in any combinations up to a full 512 K.

Magic Memory: File anything, any way you want to: names, addresses, important numbers, dates and notes. Your information is organized simply, easy to maintain, and available instantly. Supports all popular printers and video cards.

Apple® is the registered trademark of Apple Computers Inc.

Shipping, Handling & Insurance Charges and Information

Add $35.00 for shipping, handling and insurance. Illinois residents please add 6½% sales tax. Add $70.00 for CANADA, PUERTO RICO, HAWAII, ALASKA, and APO-FPO. WE DO NOT EXPORT TO OTHER COUNTRIES EXCEPT CANADA & PUERTO RICO. All orders must be in U.S. dollars. Enclose Cashier Check, Money Order or Personal Check. Allow 14 days for delivery, 2 to 7 days for phone orders, 1 day express mail. Prices & Availability subject to change without notice.

VISA - MASTERCARD - C.O.D. Please Call for C.O.D. Charges

COMPUTER DIRECT

22292 N. Pepper Road, Barrington Il. 60010

CALL (312) 382-5050 TO ORDER

We Love Our Customers!

CIRCLE READER SERVICE 39

```
5999 REM --EDITOR SUBROUTINE--
6000 T$ = "":TL = 0
6010 VTAB R:HTAB C:PRINT LEFT$(UL$,L)
6020 VTAB R:HTAB C:PRINT T$;
6030 IF TL <> L THEN PRINT CHR$(95);
6040 VTAB R:HTAB C+TL
6050 GET K$:IF K$ <> CHR$(13) THEN 6080
6060 VTAB R:HTAB C+TL
6070 PRINT LEFT$(BL$,L-TL+1):RETURN
6080 IF K$ <> CHR$(2) AND K$ <> CHR$(127) THEN 6120
6090 IF TL = 0 THEN PRINT CHR$(7);:GOTO 6050
6100 TL = TL-1:IF TL = 0 THEN T$ = "":GOTO 6020
6110 T$ = LEFT$(T$,TL):GOTO 6020
6120 IF K$ < CHR$(32) OR K$ = Q$ OR LEN(T$) = L THEN P
RINT CHR$(7);:GOTO 6050
6130 T$ = T$+K$:TL = TL+1:GOTO 6020
6999 REM --CONVERT TO UPPERCASE--
7000 Z$ = "":FOR Y = 1 TO LEN(T$)
7010 T = ASC(MID$(T$,Y,1))
7020 Z$ = Z$+CHR$(T-32*(T > 96)*(T < 123))
7030 NEXT Y:RETURN
7999 REM --LOCATION DATA--
8000 DATA 2,8,15,3,8,15,4,8,30,2,30,10,3,30,10,6,4,30
8010 DATA 7,4,30,8,4,30,9,4,30,10,4,30,11,4,30,12,4
8020 DATA 30,13,4,30,14,4,30,15,4,30
8999 REM --HEADING DATA--
9000 DATA "TO:","FROM:","RE:","DATE:","TIME:"
```

Commodore 64 & 128 (C 64 mode) w/disk drive/ *Home Message Center*

```
10 DIM H$(120),MC$(120,15),S$(5),C(15),L(15)
20 DIM P(120),R(15):PRINT CHR$(147);:SL$=CHR$(32)
30 FOR X=2 TO 39:SL$=SL$+CHR$(32):NEXT X
40 BL$=SL$+CHR$(32):UL$=CHR$(164)
50 FOR X=2 TO 40:UL$=UL$+CHR$(164):NEXT X:Q$=CHR$(34)
60 DF$="0:MESSAGE/DAT,S":M=1:NM=0:POKE 53280,14
70 FOR X=1 TO 15:READ R(X),C(X),L(X):NEXT X
80 FOR X=1 TO 5:READ S$(X):NEXT X
90 INPUT "WHAT TIME IS IT (HHMMSS)";TI$
100 F$=DF$:GOSUB 2000:IF ER=62 THEN 220
110 IF ER<>0 THEN GOSUB 3000:GOTO 100
120 OPEN 2,8,2,F$+",R":INPUT#2,NM:FOR X=1 TO NM
130 FOR Y=1 TO 15:INPUT#2,MC$(X,Y):NEXT Y:NEXT X
140 CLOSE 2
150 IF NM<1 THEN NM=0:GOTO 220
160 H$(1)=MC$(1,1):NP=1
170 FOR X=2 TO NM:FL=0:FOR Y=1 TO NP
180 IF MC$(X,1)=H$(Y) THEN FL=1:Y=NP
190 NEXT Y:IF FL=1 THEN 210
200 NP=NP+1:H$(NP)=MC$(X,1)
210 NEXT X
220 PRINT CHR$(147);:FL=0:G=0:IF NM<>0 THEN 270
230 PRINT:PRINT "THERE ARE NO MESSAGES."
240 FOR D=1 TO 200:NEXT D
250 GET K$:IF K$="" THEN 230
260 GOTO 310
270 FOR X=1 TO NP:PRINT H$(X):PRINT
280 GET K$:IF K$<>"" THEN X=NP:FL=1
290 FOR D=1 TO 200:NEXT D:NEXT X
300 IF FL=0 THEN 270
310 PRINT:INPUT "WHAT IS YOUR NAME";T$
320 IF T$="" THEN 310
330 GOSUB 8000:NA$=Z$
340 IF LEN(NA$)>15 THEN NA$=LEFT$(NA$,15)
350 PRINT CHR$(147);:M=0:FOR X=G+1 TO NM
360 IF NA$<>MC$(X,1) AND MC$(X,1)<>"ALL" THEN 410
370 M=M+1:IF M<6 THEN 400
380 M=5:X=NM:POKE 214,21:PRINT
390 PRINT "CHOOSE <N>EXT SET OF MESSAGES OR";:GOTO 410
400 P(M)=X:PRINT M;:GOSUB 4000
410 NEXT X:PRINT:IF M<>0 THEN 440
420 POKE 214,12:PRINT
430 PRINT "YOU DO NOT HAVE ANY MESSAGES."
440 POKE 214,21:PRINT:PRINT BL$;BL$;:POKE 214,22:PRINT
450 PRINT "<S>TART, <R>EAD, <W>RITE, <Q>UIT";
460 POKE 214,21:PRINT:PRINT "COMMAND: ";:GOSUB 6000
470 PRINT Z$;:IF M=5 AND Z$="N" THEN G=P(5):GOTO 350
480 FOR Z=1 TO 4:IF MID$("SRWQ",Z,1)=Z$ THEN E=Z:Z=4
490 NEXT Z:ON E GOTO 150,500,660,1000:GOTO 440
500 IF M=0 THEN 420
510 POKE 214,21:PRINT:PRINT BL$;BL$;SL$;
520 POKE 214,21:PRINT
530 INPUT "WHICH MESSAGE DO YOU WANT TO READ";V$
540 V=VAL(V$):IF V>M OR V=0 THEN 510
550 PRINT CHR$(147);:X=P(V):GOSUB 4000
560 FOR Y=6 TO 15:PRINT MC$(X,Y):NEXT Y
570 IF MC$(X,1)="ALL" AND MC$(X,2)<>NA$ THEN 650
580 POKE 214,21:PRINT:PRINT BL$:POKE 214,21:PRINT
590 INPUT "DO YOU WANT TO DELETE THIS MESSAGE";T$
600 GOSUB 8000:IF Z$<>"Y" AND Z$<>"N" THEN 580
610 IF Z$="N" THEN 350
620 IF X=NM THEN 980
630 FOR Z=X TO NM-1:FOR Y=1 TO 15
640 MC$(Z,Y)=MC$(Z+1,Y):NEXT Y:NEXT Z:NM=NM-1:GOTO 350
650 POKE 214,22:PRINT:GOSUB 5000:GOTO 350
660 PRINT CHR$(147);:IF NM<120 THEN 700
670 PRINT "THERE IS NO ROOM FOR ANY MORE MESSAGES."
680 PRINT "SOME MESSAGES MUST BE DELETED BEFORE"
690 PRINT "CONTINUING.":GOSUB 5000:GOTO 350
700 NM=NM+1:MC$(NM,2)=NA$:MC$(NM,5)=TI$
710 FOR Z=1 TO 5:POKE 214,R(Z):PRINT
720 PRINT TAB(C(Z)-6);S$(Z);:NEXT Z
730 POKE 214,R(2):PRINT:PRINT TAB(C(2));MC$(NM,2);
740 POKE 214,R(5):PRINT:PRINT TAB(C(5));MC$(NM,5);
750 FOR X=1 TO 4:IF X=2 THEN 800
760 R=R(X):C=C(X):L=L(X):GOSUB 7000
770 IF X=1 AND T$="" THEN 760
780 IF X=1 THEN GOSUB 8000:T$=Z$
790 MC$(NM,X)=T$
800 NEXT X:FOR Z=6 TO 15:POKE 214,R(Z):PRINT
810 PRINT TAB(C(Z)-3);RIGHT$(STR$(Z-6),1);": ";
820 R=R(Z):C=C(Z):L=L(Z):GOSUB 7000
830 MC$(NM,Z)=T$:IF T$="" THEN Z=15
840 NEXT Z
850 POKE 214,19:PRINT:PRINT BL$;:POKE 214,19:PRINT
860 PRINT "<M>AIL, <E>DIT, OR <A>BORT: ";
870 GOSUB 6000:PRINT Z$;
880 FOR Z=1 TO 3:IF MID$("MEA",Z,1)=Z$ THEN E=Z:Z=3
890 NEXT Z:ON E GOTO 350,900,980:GOTO 850
900 POKE 214,19:PRINT:PRINT BL$;:POKE 214,19:PRINT
910 PRINT "<T>O, <R>E, <D>ATE, <0 - 9>: ";:GOSUB 6000
920 PRINT Z$;:X=0:FOR Z=1 TO 15
930 IF MID$("TFRDH0123456789",Z,1)=Z$ THEN X=Z:Z=15
940 NEXT Z:IF X=0 OR X=2 OR X=5 THEN 900
950 IF X<6 THEN 970
960 POKE 214,R(X):PRINT::PRINT TAB(C(X)-3);Z$;":";
970 R=R(X):C=C(X):L=L(X):GOSUB 7000:GOTO 850
980 FOR Z=1 TO 15:MC$(NM,Z)="":NEXT Z:NM=NM-1
990 GOTO 350
1000 F$=DF$:GOSUB 2000
1010 IF ER<>0 AND ER<>62 THEN GOSUB 3000:GOTO 1000
1020 IF ER=0 THEN F$="@"+F$
1030 OPEN 2,8,2,F$+",W":PRINT#2,NM:FOR X=1 TO NM
1040 FOR Y=1 TO 15:PRINT#2,Q$;MC$(X,Y);Q$:NEXT Y:NEXT
X
1050 CLOSE 2:PRINT CHR$(147);:END
1999 REM --ERROR ROUTINES--
2000 CLOSE 2:OPEN 2,8,2,F$+",R":CLOSE 2
2010 CLOSE 15:OPEN 15,8,15:INPUT#15,ER,ER$:CLOSE 15
2020 RETURN
3000 PRINT "I/O ERROR. CHECK DISK AND DISK DRIVE."
3010 GOSUB 5000:RETURN
3999 REM --PRINT MESSAGE HEAD--
4000 PRINT " TO: ";MC$(X,1);"  FROM: ";MC$(X,2)
4010 PRINT " RE: ";MC$(X,3)
4020 PRINT " DATE: ";MC$(X,4);"  TIME: ";MC$(X,5)
4030 PRINT:RETURN
4999 REM --INPUT SUBROUTINE--
5000 PRINT "PRESS ANY KEY TO CONTINUE.";
6000 GET Z$:IF Z$="" THEN 6000
6010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96)*(Z<123)):RETURN
```

```
6999 REM --EDITOR SUBROUTINE--
7000 T$="":TL=0:POKE 214,R:PRINT
7010 PRINT TAB(C);LEFT$(UL$,L)
7020 POKE 214,R:PRINT:PRINT TAB(C);T$;
7030 IF TL<>L THEN PRINT CHR$(164);
7040 POKE 214,R:PRINT:PRINT TAB(C+TL);
7050 GET K$:IF K$="" THEN 7050
7060 IF K$<>CHR$(13) THEN 7090
7070 POKE 214,R:PRINT
7080 PRINT TAB(C+TL);LEFT$(BL$,L-TL+1):RETURN
7090 IF K$<>CHR$(20) THEN 7120
7100 IF TL=0 THEN 7050
7110 TL=TL-1:T$=LEFT$(T$,TL):GOTO 7020
7120 IF K$<CHR$(32) OR K$=Q$ OR K$>CHR$(90) THEN 7050
7130 IF LEN(T$)=L THEN POKE 53280,2:GOTO 7150
7140 T$=T$+K$:TL=TL+1:GOTO 7020
7150 FOR D=1 TO 50:NEXT D:POKE 53280,14:GOTO 7050
7999 REM --CONVERT TO UPPERCASE--
8000 Z$="":FOR Y=1 TO LEN(T$):T=ASC(MID$(T$,Y,1))
8010 Z$=Z$+CHR$(T-32*(T>96)*(T<123)):NEXT Y:RETURN
8999 REM --LOCATION DATA--
9000 DATA 2,7,15,3,7,15,4,7,30,2,29,10,3,29,10,6,4,30
9010 DATA 7,4,30,8,4,30,9,4,30,10,4,30,11,4,30,12,4
9020 DATA 30,13,4,30,14,4,30,15,4,30
9999 REM --HEADING DATA--
10000 DATA "TO:","FROM:","RE:","DATE:","TIME:"
```

IBM PC & compatibles w/128K RAM & disk drive/

Home Message Center

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; and Tandy 1000 w/GW-BASIC 2.02 version 01.01.00. It should also work on many other PC compatibles.

```
10 DIM H$(120),MC$(120,15),S$(5),C(15),L(15)
20 DIM P(120),R(15):CLS:KEY OFF:WIDTH 40
30 BL$=STRING$(39,32):F$="MESSAGE.DAT":M=1:NM=0
40 FOR X=1 TO 15:READ R(X),C(X),L(X):NEXT X
50 FOR X=1 TO 5:READ S$(X):NEXT X:Q$=CHR$(34)
60 DA$="L":ON ERROR GOTO 1000
70 OPEN F$ FOR INPUT AS #1:INPUT#1,NM
80 FOR X=1 TO NM:FOR Y=1 TO 15:INPUT#1,MC$(X,Y)
90 NEXT Y:NEXT X:CLOSE 1
100 ON ERROR GOTO 0:IF NM<1 THEN NM=0:GOTO 170
110 H$(1)=MC$(1,1):NP=1
120 FOR X=2 TO NM:FL=0:FOR Y=1 TO NP
130 IF MC$(X,1)=H$(Y) THEN FL=1:Y=NP
140 NEXT Y:IF FL=1 THEN 160
150 NP=NP+1:H$(NP)=MC$(X,1)
160 NEXT X
170 CLS:FL=0:G=0:IF NM<>0 THEN 210
180 PRINT:PRINT "There are no messages."
190 FOR D=1 TO 400:NEXT D
200 IF INKEY$="" THEN 180 ELSE 250
210 FOR X=1 TO NP:PRINT H$(X):PRINT
220 IF INKEY$<>"" THEN X=NP:FL=1
230 FOR D=1 TO 400:NEXT D:NEXT X
240 IF FL=0 THEN 210
250 PRINT:INPUT "What is your name";T$:GOSUB 6000
260 NA$=Z$:IF LEN(NA$)>15 THEN NA$=LEFT$(NA$,15)
270 CLS:M=0:FOR X=G+1 TO NM
280 IF NA$<>MC$(X,1) AND MC$(X,1)<>"ALL" THEN 330
290 M=M+1:IF M<6 THEN 320
300 M=5:X=NM:LOCATE 23,1
310 PRINT "Choose <N>ext set of messages or";:GOTO 330
320 P(M)=X:PRINT M;:GOSUB 2000
330 NEXT X:PRINT:IF M<>0 THEN 350
340 LOCATE 13,1:PRINT "You do not have any messages."
350 LOCATE 24,1:PRINT BL$;:LOCATE 25,1
360 PRINT "<S>tart, <R>ead, <W>rite, <Q>uit";
370 LOCATE 24,1:PRINT "Command: ";:GOSUB 4000
380 PRINT Z$;:IF M=5 AND Z$="N" THEN G=P(5):GOTO 270
390 ON INSTR("SRWQ",Z$) GOTO 100,400,550,840:GOTO 350
400 IF M=0 THEN 340
410 LOCATE 22,1:PRINT STRING$(119,32);:LOCATE 22,1
```


COMPUTER CARE KIT

Keep your computer looking —and acting—brand new!

Protect your equipment...your data...your sanity...with Philips Computer Care Products. Only $39.95 complete!

Dust, smoke, and static can lay waste to hours of work on your computer. But Philips ECG gives you the vital Computer Care Products you need to protect your equipment and your data—in one complete package. For just $39.95 per kit, you get all this:

- Floppy disk head cleaners (Single and Dual Side)
- Magnetic tape head and disk cleaner spray (1¾ oz.)
- Computer anti-static spray (8 oz.)
- Jet air cleaner (8 oz.)
- Computer glass and enclosure cleaner spray (8 oz.)
- Computer terminal screen cleaner pads (20)
- Lint-free wipes (50)
- Cleaning swabs (25)
- Complete easy-to-follow instructions

Bought separately, these products would cost much more. And the kit comes with a no risk 30-day money-back guarantee. Whether you store your files on floppy disks or tapes and cassettes, Philips ECG can help you put a clean end to potential computer problems. Write or call for your Computer Care Products kit today.

CRASH PREVENTION SALE!

Yes, I want to put a clean end to potential computer problems. Send me _____ Philips ECG Computer Care Products kit(s) for just $39.95 each, plus $2.95 shipping and handling (NY State residents please add 8% sales tax). If not completely satisfied, I can return the kit(s) within 30 days for a full refund.

Name_____ Company_____

Address_____

City_____ State_____ Zip_____

Phone ( ) _____

☐ Check Enclosed ☐ VISA ☐ MC

Expiration Date ___/___/___

OR CALL TOLL FREE 1-800-752-5207

ElectroniCareProducts

Box 212, Dept. FC • Buffalo, New York 14224

CIRCLE READER SERVICE 30

```
420 INPUT "Which message do you want to read";V$
430 V=VAL(V$):IF V>M OR V=0 THEN 410
440 CLS:X=P(V):GOSUB 2000:FOR Y=6 TO 15:PRINT MC$(X,Y)
450 NEXT Y
460 IF MC$(X,1)="ALL" AND MC$(X,2)<>NA$ THEN 540
470 LOCATE 23,1:PRINT BL$:LOCATE 23,1
480 INPUT "Do you want to delete this message";T$
490 GOSUB 6000:IF Z$<>"Y" AND Z$<>"N" THEN 470
500 IF Z$="N" THEN 270
510 IF X=NM THEN 820
520 FOR Z=X TO NM-1:FOR Y=1 TO 15
530 MC$(Z,Y)=MC$(Z+1,Y):NEXT Y:NEXT Z:NM=NM-1:GOTO 270
540 LOCATE 24,1:GOSUB 3000:GOTO 270
550 CLS:NM=NM+1:IF NM<121 THEN 590
560 PRINT "There is no room for any more messages."
570 PRINT "Some messages must be deleted before"
580 PRINT "continuing.":GOSUB 3000:NM=NM-1:GOTO 270
590 MC$(NM,2)=NA$:MC$(NM,4)=DATE$:MC$(NM,5)=TIME$
600 FOR Z=1 TO 5:LOCATE R(Z),C(Z)-6:PRINT S$(Z);
610 NEXT Z:LOCATE R(2),C(2):PRINT MC$(NM,2);
620 LOCATE R(4),C(4):PRINT MC$(NM,4);
630 LOCATE R(5),C(5):PRINT MC$(NM,5);
640 R=R(1):C=C(1):L=L(1):GOSUB 5000:IF T$="" THEN 640
650 GOSUB 6000:MC$(NM,1)=Z$
660 R=R(3):C=C(3):L=L(3):GOSUB 5000:MC$(NM,3)=T$
670 FOR Z=6 TO 15:LOCATE R(Z),C(Z)-3
680 PRINT RIGHT$(STR$(Z-6),1);": ";:R=R(Z):C=C(Z)
690 L=L(Z):GOSUB 5000:MC$(NM,Z)=T$:IF T$="" THEN Z=15
700 NEXT Z
710 LOCATE 20,1:PRINT BL$;:LOCATE 20,1
720 PRINT "<M>ail, <E>dit, or <A>bort: ";
730 GOSUB 4000:PRINT Z$
740 ON INSTR("MEA",Z$) GOTO 270,750,820:GOTO 710
750 LOCATE 20,1:PRINT BL$;:LOCATE 20,1
760 PRINT "<T>o, <R>e, <0 - 9>: ";:GOSUB 4000
770 PRINT Z$:IF Z$="T" THEN X=1:GOTO 810
780 IF Z$="R" THEN X=3:GOTO 810
790 IF Z$<"0" OR Z$>"9" THEN 750
800 X=VAL(Z$)+6:LOCATE R(X),C(X)-3:PRINT Z$;":";
810 R=R(X):C=C(X):L=L(X):GOSUB 5000:GOTO 710
820 FOR Z=1 TO 15:MC$(NM,Z)="":NEXT Z:NM=NM-1
830 GOTO 270
840 DA$="S":ON ERROR GOTO 1000
850 OPEN F$ FOR OUTPUT AS #1:WRITE#1,NM
860 FOR X=1 TO NM:FOR Y=1 TO 15:WRITE#1,MC$(X,Y)
870 NEXT Y:NEXT X:CLOSE 1
880 ON ERROR GOTO 0:CLS:KEY ON:END
999 REM --ERROR ROUTINES--
1000 CLOSE 1:EN=ERR:RESUME 1010
1010 IF EN=53 THEN 170
1020 PRINT "I/O error. Check disk and disk drive."
1030 GOSUB 3000:IF DA$="L" THEN 60 ELSE 840
1999 REM --PRINT MESSAGE HEAD--
2000 PRINT " To: ";MC$(X,1);"  From: ";MC$(X,2)
2010 PRINT " Re: ";MC$(X,3)
2020 PRINT " Date: ";MC$(X,4);"  Time: ";MC$(X,5)
2030 PRINT:RETURN
2999 REM --INPUT SUBROUTINE--
3000 PRINT "Press any key to continue.";
4000 Z$=INKEY$:IF Z$="" THEN 4000
4010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96)*(Z<123)):RETURN
4999 REM --EDITOR SUBROUTINE--
5000 T$="":TL=0:LOCATE R,C,1:PRINT STRING$(L,95)
5010 LOCATE R,C:PRINT T$;
5020 LOCATE R,C+TL
5030 K$=INKEY$:IF K$="" THEN 5030
5040 IF K$<>CHR$(13) THEN 5060
5050 LOCATE R,C+TL,0:PRINT STRING$(L-TL,32):RETURN
5060 IF K$<>CHR$(8) THEN 5090
5070 IF TL=0 THEN SOUND 400,2:GOTO 5030
5080 TL=TL-1:T$=LEFT$(T$,TL):GOTO 5010
5090 IF K$<CHR$(32) OR K$=Q$ OR LEN(K$)=2 OR LEN(T$)=L
 THEN SOUND 400,2:GOTO 5030
5100 T$=T$+K$:TL=TL+1:GOTO 5010
5999 REM --CONVERT TO UPPERCASE--
6000 Z$="":FOR Y=1 TO LEN(T$):T=ASC(MID$(T$,Y,1))
6010 Z$=Z$+CHR$(T-32*(T>96)*(T<123)):NEXT Y:RETURN
6999 REM --LOCATION DATA--
7000 DATA 2,8,15,3,8,15,4,8,30,2,30,10,3,30,10,6,4,30
7010 DATA 7,4,30,8,4,30,9,4,30,10,4,30,11,4,30,12,4
7020 DATA 30,13,4,30,14,4,30,15,4,30
7999 REM --HEADING DATA--
8000 DATA "To:","From:","Re:","Date:","Time:"
```

Tandy Color Computer w/64K & disk drive/ *Home Message Center*

```
10 CLEAR 5000:DIM H$(120),MC$(120,12),S$(5),C(12)
20 DIM L(12),P(120),R(12):CLS:SL$=STRING$(31,32)
30 BL$=SL$+CHR$(32):F$="MESSAGE/DAT":M=1:NM=0
40 FOR X=1 TO 12:READ R(X),C(X),L(X):NEXT X
50 FOR X=1 TO 5:READ S$(X):NEXT X
60 PRINT@32,BL$;SL$
70 PRINT@32,"IS THIS THE FIRST TIME YOU"
80 PRINT "ARE USING THE PROGRAM? ";:GOSUB 4000
90 PRINT Z$:IF Z$="Y" THEN NM=0:GOTO 210
100 IF Z$<>"N" THEN 60
110 GOSUB 1000:OPEN "I",#1,F$:INPUT#1,NM
120 FOR X=1 TO NM:FOR Y=1 TO 12:INPUT#1,MC$(X,Y)
130 NEXT Y:NEXT X:CLOSE 1
140 IF NM<1 THEN NM=0:GOTO 210
150 H$(1)=MC$(1,1):NP=1
160 FOR X=2 TO NM:FL=0:FOR Y=1 TO NP
170 IF MC$(X,1)=H$(Y) THEN FL=1:Y=NP
180 NEXT Y:IF FL=1 THEN 200
190 NP=NP+1:H$(NP)=MC$(X,1)
200 NEXT X
210 CLS:FL=0:G=0:IF NM<>0 THEN 250
220 PRINT:PRINT "THERE ARE NO MESSAGES."
230 FOR D=1 TO 400:NEXT D
240 IF INKEY$="" THEN 220 ELSE 290
250 FOR X=1 TO NP:PRINT H$(X):PRINT
260 IF INKEY$<>"" THEN X=NP:FL=1
270 FOR D=1 TO 400:NEXT D:NEXT X
280 IF FL=0 THEN 250
290 PRINT:INPUT "WHAT IS YOUR NAME";T$:GOSUB 6000
300 NA$=Z$:IF LEN(NA$)>15 THEN NA$=LEFT$(NA$,15)
310 CLS:M=0:FOR X=G+1 TO NM
320 IF NA$<>MC$(X,1) AND MC$(X,1)<>"ALL" THEN 370
330 M=M+1:IF M<4 THEN 360
340 PRINT@416,"CHOOSE <N>EXT SET OF MESSAGES OR";
350 M=3:X=NM:GOTO 370
360 P(M)=X:PRINT M;:GOSUB 2000
370 NEXT X:PRINT:IF M<>0 THEN 390
380 PRINT@224,"YOU DO NOT HAVE ANY MESSAGES."
390 PRINT@448,BL$;
400 PRINT@480,"<S>TART,<R>EAD,<W>RITE,<Q>UIT";
410 PRINT@448,"COMMAND: ";:GOSUB 4000
420 PRINT Z$;:IF M=3 AND Z$="N" THEN G=P(3):GOTO 310
430 ON INSTR("SRWQ",Z$) GOTO 140,440,610,900:GOTO 390
440 IF M=0 THEN 380
450 PRINT@416,STRING$(95,32);
460 PRINT@416,"WHICH MESSAGE DO YOU WANT"
470 INPUT "TO READ";V$:V=VAL(V$)
480 IF V>M OR V=0 THEN 450
490 CLS:X=P(V):GOSUB 2000:FOR Y=6 TO 12:PRINT MC$(X,Y)
500 NEXT Y
510 IF MC$(X,1)="ALL" AND MC$(X,2)<>NA$ THEN 600
520 PRINT@416,BL$;SL$
530 PRINT@416,"DO YOU WANT TO DELETE"
540 INPUT "THIS MESSAGE";T$:GOSUB 6000
550 IF Z$<>"Y" AND Z$<>"N" THEN 520
560 IF Z$="N" THEN 310
570 IF X=NM THEN 880
580 FOR Z=X TO NM-1:FOR Y=1 TO 12
590 MC$(Z,Y)=MC$(Z+1,Y):NEXT Y:NEXT Z:NM=NM-1:GOTO 310
600 PRINT@448:GOSUB 3000:GOTO 310
610 CLS:IF NM<120 THEN 660
620 PRINT "THERE IS NO ROOM FOR ANY MORE"
630 PRINT "MESSAGES. SOME MESSAGES MUST"
640 PRINT "BE DELETED BEFORE CONTINUING."
650 GOSUB 3000:GOTO 310
```

```
660 NM=NM+1:MC$(NM,2)=NA$:FOR Z=1 TO 5
670 PRINT@R(Z)*32+C(Z)-6,S$(Z);:NEXT Z
680 PRINT@40,MC$(NM,2);:FOR X=1 TO 5:IF X=2 THEN 730
690 PO=R(X)*32+C(X):L=L(X):GOSUB 5000
700 IF X=1 AND T$="" THEN 690
710 IF X=1 THEN GOSUB 6000:T$=Z$
720 MC$(NM,X)=T$
730 NEXT X:FOR Z=6 TO 12:PO=R(Z)*32+C(Z)
740 PRINT@PO-3,RIGHT$(STR$(Z-6),1);": ";
750 L=L(Z):GOSUB 5000:MC$(NM,Z)=T$:IF T$="" THEN Z=15
760 NEXT Z
770 PRINT@448,BL$;SL$;
780 PRINT@448,"<M>AIL, <E>DIT, OR <A>BORT: ";
790 GOSUB 4000:PRINT Z$
800 ON INSTR("MEA",Z$) GOTO 310,810,880:GOTO 770
810 PRINT@448,BL$;SL$;
820 PRINT@448,"<T>O, <R>E, <D>ATE,"
830 PRINT "<H>OURS, <0 - 6>: ";:GOSUB 4000:PRINT Z$;
840 X=INSTR("TFRDH0123456",Z$):IF X=0 OR X=2 THEN 810
850 IF X<6 THEN 870
860 PO=R(X)*32+C(X):PRINT@PO-3,Z$;":";
870 L=L(X):GOSUB 5000:GOTO 770
880 FOR Z=1 TO 12:MC$(NM,Z)="":NEXT Z:NM=NM-1
890 GOTO 310
900 CLS:GOSUB 1000:OPEN "O",#1,F$:WRITE#1,NM
910 FOR X=1 TO NM:FOR Y=1 TO 12:WRITE#1,MC$(X,Y)
920 NEXT Y:NEXT X:CLOSE 1:CLS:END
999 REM --ERROR ROUTINES--
1000 PRINT:PRINT "CHECK DISK AND DISK DRIVE."
1010 GOSUB 3000:RETURN
1999 REM --PRINT MESSAGE HEAD--
2000 PRINT " TO: ";MC$(X,1);"  FROM: ";MC$(X,2)
2010 PRINT " RE: ";MC$(X,3)
2020 PRINT " DATE: ";MC$(X,4);"  TIME: ";MC$(X,5)
2030 PRINT:RETURN
2999 REM --INPUT SUBROUTINE--
3000 PRINT "PRESS ANY KEY TO CONTINUE.";
4000 Z$=INKEY$:IF Z$="" THEN 4000
4010 Z=ASC(Z$):Z$=CHR$(Z-32*(Z>96)*(Z<123)):RETURN
4999 REM --EDITOR SUBROUTINE--
5000 T$="":TL=0
5010 PRINT@PO,T$;STRING$(L-TL,45);
5020 PRINT@PO+TL,"";
5030 K$=INKEY$:IF K$="" THEN 5030
5040 IF K$<>CHR$(13) THEN 5060
5050 PRINT@PO+TL,STRING$(L-TL,32):RETURN
5060 IF K$<>CHR$(8) THEN 5090
5070 IF TL=0 THEN SOUND 200,2:GOTO 5030
5080 TL=TL-1:T$=LEFT$(T$,TL):GOTO 5010
5090 IF K$<CHR$(32) OR K$=CHR$(34) OR LEN(T$)=L THEN S
OUND 200,2:GOTO 5030
5100 T$=T$+K$:TL=TL+1:GOTO 5010
5999 REM --CONVERT TO UPPERCASE--
6000 Z$="":FOR Y=1 TO LEN(T$):T=ASC(MID$(T$,Y,1))
6010 Z$=Z$+CHR$(T-32*(T>96)*(T<123)):NEXT Y:RETURN
6999 REM --LOCATION DATA--
7000 DATA 0,7,15,1,7,15,2,7,15,3,7,15,4,7,15,6,3,25
7010 DATA 7,3,25,8,3,25,9,3,25,10,3,25,11,3,25,12,3,25
7999 REM --HEADING DATA--
8000 DATA "TO:","FROM:","RE:","DATE:","TIME:"
```


DIGITAL VISION

ALL NEW
COMPUTEREYES/2™

VIDEO DIGITIZING SYSTEM FOR APPLE II SERIES COMPUTERS

The world's highest-quality, lowest-priced video digitizer has just gotten even better! The new card-based COMPUTEREYES/2™ for Apple II, II+, IIe and compatibles connects to any standard video source to capture real-world images on your Apple's graphics display. Hundreds of applications!

COMPUTEREYES/2™ features include:

- Fast scanning-single 6 second scan for all capture modes
- Automatic and manual control over both brightness and contrast
- Keyboard-controlled video switching to allow previewing the video source on the Apple monitor.
- New, familiar, Appleworks-style menu
- Standard software supports Apple Hi-Res and Double Hi-Res graphics, plus Gray-Scale boards for really superb images!
- Optional COMPUTEREYES/2™ Enhancement Software package available to convert COMPUTEREYES images to Printshop, Printmaster, Newsroom, and other formats; perform image negate, flip, etc
- Also available as complete system including quality video camera

STILL ONLY $129.95

Versions available for:

- Apple II, II+, IIe and IIc
- Commodore 64/128
- Atari 800/800XL/130XE
- IBM PC and compatibles ($249.95—includes additional features)
- Atari ST ($249.95-full color digitizer)

See your dealer or order direct. Mass. residents add 5% sales tax. Mastercard, Visa accepted. To order, or for more information, write or call:

DIGITAL VISION, INC.
66 Eastern Avenue Dedham, MA 02026 (617) 329-5400

CIRCLE READER SERVICE 15

DIRECT ACCESS

To Place Your Ad in
DIRECT ACCESS
Call (212) 505-3636
FAMILY COMPUTING
730 Broadway
New York, N.Y. 10003

SPACE RACE

BY JOEY LATIMER

Welcome to the *Space Race*. You are the captain of a V-Racer, one of the fastest vehicles in the galaxy. To maintain your piloting skills and test your ships' speed and maneuverability, you like to take test drives through a nearby asteroid belt. The asteroids in the belt were once used for mining precious metals, but now the intricate tunnel system makes a challenging race course. To maneuver your ship through the tunnels and avoid floating bombs, press "B" to move left, and "N" to move right.

As you move the V-Racer through a passageway, you gain points. When you crash, you lose one of your three ships, your score is displayed, and you can continue with a remaining ship. Each time you survive the tunnel tests and reach the core of an asteroid, you will receive a hefty supply of bonus points. When you crash all three V-Racers, the game is over, your score is totaled, and you are given the option of quitting or playing again. Good luck, Captain!

PROGRAMMER'S NOTE: *Except on the Atari, it's easy to change the movement keys, "B" and "N", to other keys you might prefer. For example, you can replace the "B" and "N" in line 20 with "J" and "K".*

Apple II series/*Space Race*

```
20 L$ = "B":R$ = "N"
30 NORMAL:TEXT:CL = -16368:Q$ = CHR$(34)
40 SP$ = CHR$(32):SP$ = SP$+SP$+SP$
50 FOR X = 0 TO 28:READ A:POKE 768+X,A:NEXT X
60 SC = 0:EN = 5:SH = 1:POKE CL,0
70 SK = 0:SX = 20:HX = SX:X = 10:DX = 1
80 HOME:SF = 0:FOR PL = 1 TO EN:L = 3:R = 22
90 FOR T = 1 TO 60
100 K = PEEK(-16384)-128:IF K < 0 THEN 130
110 POKE CL,0:GOSUB 1000
120 SX = SX+(K$ = R$)-(K$ = L$)
130 CK = 0:FOR C = SX-1 TO SX+1
140 CK = CK+SCRN(C,24)+16*SCRN(C,25):NEXT C
150 VTAB 12:HTAB HX:PRINT SP$
160 IF CK <> 480 THEN T = 60:PL = EN:SF = 1:GOTO 270
170 VTAB 24:INVERSE:PRINT SPC(X);
180 NORMAL:PRINT SPC(13);
190 INVERSE:PRINT SPC(26-X):NORMAL:PRINT
200 VTAB 12:HTAB SX:PRINT Q$;"V";Q$:HX = SX
210 IF (PL = EN AND T > 40) OR RND(1) > PL/21 THEN 240
220 SK = SK+1
230 VTAB 23:HTAB X+INT(RND(1)*11)+2:PRINT "O";
240 X = X+DX:IF X >= L THEN 260
250 DX = 1:R = INT(RND(1)*12)+10:GOTO 270
260 IF X > R THEN DX = -1:L = INT(RND(1)*9)+3
270 NEXT T,PL:IF SF THEN 360
280 EN = EN+1:IF EN > 9 THEN EN = 9
290 VTAB 23:HTAB 1:FOR T = 1 TO 70:GOSUB 2000
300 PRINT "YOU HAVE REACHED THE CORE!!!";SP$;:NEXT T
310 HOME:PRINT "SCORE:":FOR T = 1 TO SK:SC = SC+100
320 GOSUB 2000:VTAB 1:HTAB 8:PRINT SC:NEXT T
330 PRINT "SHIPS LEFT: ";4-SH
340 PRINT:PRINT "PRESS ANY KEY TO CONTINUE.";
350 POKE CL,0:GOSUB 3000:GOTO 70
360 FOR T = 1 TO 30
370 VTAB 13:HTAB SX:DUM = PEEK(-16336)
380 T$ = CHR$(40+RND(1)*4):PRINT T$;T$;T$:NEXT T
390 HOME:PRINT "SCORE:":FOR T = 1 TO SK:SC = SC+10
400 GOSUB 2000:VTAB 1:HTAB 8:PRINT SC:NEXT T
410 PRINT "SHIPS LEFT: ";3-SH:PRINT:PRINT
420 IF SH <> 3 THEN 450
430 PRINT "THE GAME IS OVER!":PRINT
440 PRINT "PRESS <P> TO PLAY AGAIN";:GOTO 460
450 PRINT "PRESS <C> TO CONTINUE";
460 PRINT " OR <Q> TO QUIT.";
470 GOSUB 3000:IF K$ = "Q" THEN HOME:END
480 IF K$ = "P" AND SH = 3 THEN 60
490 IF K$ = "C" AND SH < 3 THEN SH = SH+1:GOTO 70
500 GOTO 470
1000 K$ = CHR$(K-(K > 96)*(K < 123)*32):RETURN
2000 POKE 8,255-T:POKE 6,10:CALL 768:RETURN
3000 K = PEEK(-16384)-128:IF K < 0 THEN 3000
3010 POKE CL,0:GOSUB 1000:RETURN
4000 DATA 165,8,74,133,10,164,8,173,48,192,136,234
4010 DATA 234,208,251,165,7,56,229,10,133,7,176,237
4020 DATA 198,6,208,233,96
```

Atari 400/800, 600/800XL, & 130XE/*Space Race*

```
10 DIM BL$(13),SP$(3),T$(20),X$(140),Z$(1)
20 LF=21:RT=35
30 OPEN #1,4,0,"K:":GRAPHICS 0:POKE 82,2
40 BL$=CHR$(32):BL$(13)=BL$:BL$(2)=BL$:SP$=BL$
50 SP$=CHR$(32):SP$(3)=SP$:SP$(2)=SP$
60 FOR X=1 TO 7:READ CH:T$=CHR$(CH):T$(20)=T$:T$(2)=T$
70 X$(X*20-19)=T$:NEXT X:POKE 752,1
80 SC=0:EN=5:SH=1
90 SK=0:SX=18:HX=SX:X=10:DX=1
100 PRINT CHR$(125):SF=0:FOR PL=1 TO EN:L=4:R=18
110 FOR T=1 TO 60:K=PEEK(764):IF K=255 THEN 130
120 SX=SX+(K=RT)-(K=LF):POKE 764,255
130 CK=0:FOR C=SX TO SX+2:LOCATE C,11,V
140 CK=CK+V:NEXT C:POSITION HX,10:PRINT SP$
150 IF CK<>96 THEN T=60:PL=EN:SF=-1:GOTO 240
160 POSITION 2,23:Z=PL*20-19
170 PRINT X$(Z,Z+X-1);BL$;X$(Z,Z+22-X)
180 POSITION SX,10:PRINT CHR$(34);"V";CHR$(34);:HX=SX
190 IF (PL=EN AND T>40) OR RND(1)>PL/21 THEN 210
200 SK=SK+1:POSITION INT(RND(1)*11)+X+3,22:PRINT "O";
210 X=X+DX
220 IF X<L THEN DX=1:R=INT(RND(1)*10)+10:GOTO 240
230 IF X>R THEN DX=-1:L=INT(RND(1)*6)+4
240 NEXT T:NEXT PL:IF SF THEN 340
250 EN=EN+1:IF EN>7 THEN EN=7
260 POSITION 1,23:FOR T=50 TO 20 STEP -1:GOSUB 1000
270 PRINT "YOU'VE REACHED THE CORE!!!";SP$;:NEXT T
280 PRINT CHR$(125);"SCORE:":FOR T=1 TO SK:SC=SC+100
290 GOSUB 1000:POSITION 9,0:PRINT SC:NEXT T
300 PRINT "SHIPS LEFT:";4-SH:PRINT
310 PRINT "PRESS ANY KEY TO CONTINUE."
320 IF PEEK(764)<>255 THEN 320
330 GET #1,K:GOTO 90
340 POSITION SX,10:PRINT SP$;
350 FOR T=80 TO 10 STEP -10:GOSUB 1000
360 GOSUB 1000:Z$=CHR$(40+INT(RND(1)*4))
370 POSITION SX,11:PRINT Z$;Z$;Z$:NEXT T
380 PRINT CHR$(125);"SCORE:"
390 FOR T=SK TO 1 STEP -1:SC=SC+10
400 GOSUB 1000:POSITION 9,0:PRINT SC:NEXT T
410 PRINT "SHIPS LEFT:";3-SH:PRINT
420 PRINT :IF SH<>3 THEN 450
430 PRINT "THE GAME IS OVER!":PRINT
440 PRINT "PRESS <P> TO PLAY AGAIN":GOTO 460
450 PRINT "PRESS <C> TO CONTINUE";
460 PRINT " OR <Q> TO QUIT."
```

```
470 GET #1,K
480 IF K=81 THEN PRINT CHR$(125):POKE 752,0:END
490 IF K=80 AND SH=3 THEN 80
500 IF K=67 AND SH<3 THEN SH=SH+1:GOTO 90
510 GOTO 470
1000 SOUND 0,T,10,8:FOR D=1 TO 1:NEXT D
1010 SOUND 0,T,10,8:SOUND 0,0,0,0:RETURN
2000 DATA 160,136,148,152,143,154,135
```

Commodore 64 & 128 (C 64 mode)/*Space Race*

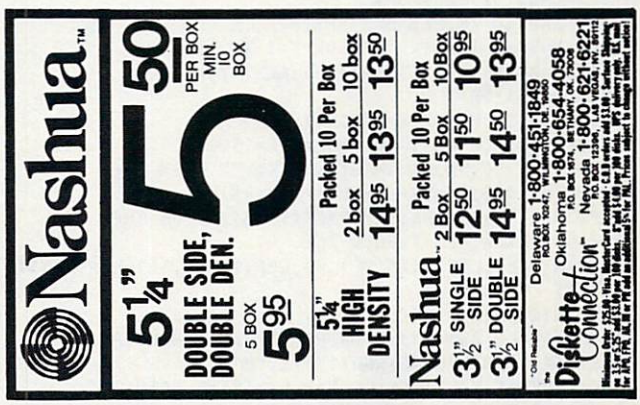
```
10 DIM KO(9):V=53248:S=54272:TT=V+17
20 L$="B":R$="N"
30 FOR X=0 TO 23:POKE S+X,0:NEXT X
40 POKE S+24,15:POKE S+5,31:POKE S+6,240
50 RN$=CHR$(18)+CHR$(32):FOR X=1 TO 40:X$=X$+RN$
60 NEXT X:FOR X=1 TO 9:READ KO(X):NEXT X
70 POKE V+22,PEEK(V+22) AND 247
80 POKE TT,PEEK(TT) AND 247:POKE 650,128
90 FOR I=832 TO 959:READ D:POKE I,D:NEXT
100 POKE V+37,0:POKE V+38,14:POKE V+39,13
110 POKE V+28,1:POKE V+23,0:POKE V+29,0
120 POKE 2040,13:POKE 2041,14:POKE V+32,14
130 SC=0:EN=5:SH=1
140 POKE V+16,0
150 SK=0:SX=173:X=15:DX=1:POKE V,SX:POKE V+1,125
160 PRINT CHR$(147);:FOR PL=1 TO EN:POKE V+33,PL+3
170 L=5:R=47:POKE V+31,0:POKE V+21,1
180 SF=0:FOR T=1 TO 60:GET K$:IF K$<>"" THEN 200
190 POKE TT,(PEEK(TT) AND 248)+7:GOTO 240
200 SX=SX+((K$=L$)-(K$=R$))*6
210 IF SX>255 THEN SX=0:POKE V+16,3:GOTO 230
220 IF SX<0 THEN SX=255:POKE V+16,0
230 POKE V,SX
240 PRINT CHR$(KO(PL));LEFT$(X$,X);CHR$(146);SPC(13);L
EFT$(X$,53-X)
250 IF PEEK(V+31)>0 THEN T=60:PL=EN:SF=-1:GOTO 310
260 IF (PL=EN AND T>40) OR RND(1)>PL/21 THEN 290
270 SK=SK+1:U=INT(RND(1)*13)+INT(X/2)
280 POKE 56256+U,1:POKE 1984+U,87
290 X=X+DX:IF X<L THEN DX=1:R=INT(RND(1)*24)+23
300 IF X>R THEN DX=-1:L=INT(RND(1)*20)+5
310 NEXT T,PL:IF SF THEN 440
320 EN=EN+1:IF EN>9 THEN EN=9
330 POKE V+22,PEEK(V+22) OR 8
340 FOR T=1 TO 70:POKE V+33,INT(RND(1)*15):GOSUB 1000
350 PRINT "YOU HAVE REACHED THE CORE!!!    ";:NEXT T
360 POKE V+33,7:POKE S+4,32:POKE V+21,0
370 POKE V+22,PEEK(V+22) AND 247
380 PRINT CHR$(147);CHR$(144):PRINT " SCORE:"
390 FOR T=1 TO SK:SC=SC+100:GOSUB 1000
400 PRINT CHR$(19):PRINT TAB(7);SC:NEXT T
410 PRINT:PRINT " SHIPS LEFT:";4-SH:PRINT
420 POKE 198,0:PRINT " PRESS ANY KEY TO CONTINUE."
430 GET K$:ON -(K$="") GOTO 430:GOTO 150
440 POKE V+2,SX:POKE V+3,135:POKE V+21,2:POKE S+4,129
450 FOR T=1 TO 30:POKE V+40,INT(RND(1)*15)
460 POKE S,T:POKE S+1,T*4:NEXT T
470 POKE S+4,128:POKE V+21,0:POKE V+33,7
480 PRINT CHR$(147);CHR$(144):PRINT " SCORE:"
490 FOR T=1 TO SK:SC=SC+10:GOSUB 1000
500 PRINT CHR$(19):PRINT TAB(7);SC:NEXT T
510 PRINT " SHIPS LEFT:";3-SH:PRINT:PRINT
520 IF SH<>3 THEN 550
530 PRINT " THE GAME IS OVER!":PRINT
540 PRINT " PRESS <P> TO PLAY AGAIN":GOTO 560
550 PRINT " PRESS <C> TO CONTINUE";
560 PRINT " OR <Q> TO QUIT.":POKE 198,0
570 GET K$:IF K$="" THEN 570
580 IF K$="Q" THEN 620
590 IF K$="P" AND SH=3 THEN 130
600 IF K$="C" AND SH<3 THEN SH=SH+1:GOTO 140
610 GOTO 570
620 POKE 53281,6:PRINT CHR$(147);CHR$(154)
630 POKE V+22,200:POKE TT,27:END
1000 POKE S+4,33:POKE S,T:POKE S+1,T
1010 POKE S+4,32:RETURN
2000 DATA 144,5,28,156,30,31,158,129,149
3000 DATA 0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0,0
3010 DATA 0,0,0,7,190,208,7,170,208,7,235,208,5,235
3020 DATA 80,1,235,64,1,235,64,1,105,64,0,105,0,0
3030 DATA 125,0,0,125,0,0,85,0,0,20,0,0,20,0,0,179
3040 DATA 127,243,28,192,25,119,0,140,76,22,230,76
3050 DATA 48,50,0,71,26,99,141,202,66,56,154,134,38
3060 DATA 146,132,38,146,132,57,146,135,143,54,96
3070 DATA 230,100,48,48,196,31,25,156,1,207,16,0,64
3080 DATA 51,119,120,38,16,8,224,30,15,140,3,0,0,0
```

IBM PC & compatibles/*Space Race*

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; and Tandy 1000 w/GW-BASIC 2.02 version 01.01.00. It should also work on many other PC compatibles.

```
10 DEF SEG=0:KEY OFF:WIDTH 40:LOCATE ,,0:RANDOMIZE
20 L$="B":R$="N"
30 SP$=STRING$(3,32):Q$=CHR$(34)
40 SC=0:EN=5:SH=1
50 SK=0:SX=20:HX=SX:X=10:DX=1
60 CLS:SF=0:FOR PL=1 TO EN:L=3:R=22
70 FOR T=1 TO 60:K$=INKEY$:IF K$="" THEN 100
80 GOSUB 1000:SX=SX+(K$=L$)-(K$=R$)
90 POKE 1050,PEEK(1052)
100 CK=0:FOR C=SX TO SX+2
110 CK=CK+SCREEN(11,C):NEXT C
120 LOCATE 10,HX:PRINT SP$
130 IF CK<>96 THEN T=60:PL=EN:SF=-1:GOTO 220
140 LOCATE 24,1:COLOR PL
150 PRINT STRING$(X,219);SPC(13);STRING$(26-X,219)
160 LOCATE 10,SX:COLOR 7:PRINT Q$;"V";Q$:HX=SX
170 IF (PL=EN AND T>40) OR RND>PL/21 THEN 200
180 SK=SK+1:COLOR PL+1
```

→



CIRCLE READER SERVICE 16

```
190 LOCATE 23,INT(RND*11)+X+2:PRINT "O"
200 X=X+DX:IF X<L THEN DX=1:R=INT(RND*12)+10:GOTO 220
210 IF X>R THEN DX=-1:L=INT(RND*9)+3
220 NEXT T,PL:IF SF THEN 330
230 EN=EN+1:IF EN>9 THEN EN=9
240 LOCATE 24,1:FOR T=1 TO 70:GOSUB 2000:COLOR RND*15
250 PRINT TAB(T MOD 14+1);"YOU'VE REACHED THE CORE!!!"
260 NEXT T:CLS:COLOR 14:PRINT "SCORE:"
270 FOR T=1 TO SK:SC=SC+100
280 GOSUB 2000:LOCATE 1,7:PRINT SC:NEXT T
290 PRINT "SHIPS LEFT:";4-SH
300 PRINT:PRINT "PRESS ANY KEY TO CONTINUE."
310 POKE 1050,PEEK(1052):PRINT
320 IF INKEY$="" THEN 320 ELSE 50
330 LOCATE 10,SX:PRINT SP$
340 FOR T=50 TO 200 STEP 25:GOSUB 2000
350 GOSUB 2000:COLOR RND*15:T$=CHR$(40+INT(RND*4))
360 LOCATE 11,SX:PRINT T$;T$;T$:NEXT T
370 CLS:COLOR 12:PRINT "SCORE:":FOR T=1 TO SK:SC=SC+10
380 GOSUB 2000:LOCATE 1,7:PRINT SC:NEXT T
390 PRINT "SHIPS LEFT:";3-SH:PRINT
400 PRINT:COLOR 2:IF SH<>3 THEN 430
410 PRINT "THE GAME IS OVER!":PRINT
420 PRINT "PRESS <P> TO PLAY AGAIN";:GOTO 440
430 PRINT "PRESS <C> TO CONTINUE";
440 PRINT " OR <Q> TO QUIT."
450 K$=INKEY$:IF K$="" THEN 450
460 GOSUB 1000:IF K$="Q" THEN CLS:KEY OFF:END
470 IF K$="P" AND SH=3 THEN 40
480 IF K$="C" AND SH<3 THEN SH=SH+1:GOTO 50 ELSE 450
1000 K=ASC(K$):K$=CHR$(K-(K>96)*(K<123)*32):RETURN
2000 SOUND T+125,1:RETURN
```

Tandy Color Computer/*Space Race*

```
10 CLEAR 1000:DIM X$(7)
20 L$="B":R$="N"
30 SP$=CHR$(32):BL$=SP$
40 FOR X=2 TO 20:BL$=BL$+SP$:NEXT X
50 FOR X=1 TO 7:X$(X)="":FOR Y=1 TO 20
60 X$(X)=X$(X)+CHR$(143+X*16):NEXT Y,X
70 SC=0:EN=5:SH=1
80 SK=0:SX=18:HX=SX:X=10:DX=1
90 CLS:SF=0:FOR PL=1 TO EN:L=2:R=15
100 FOR T=1 TO 50:K$=INKEY$:IF K$="" THEN 120
110 GOSUB 1000:SX=SX+(K$=L$)-(K$=R$)
120 PRINT@192+HX,SP$;:IF PEEK(1248+SX)=96 THEN 140
130 T=50:PL=EN:SF=-1:GOTO 200
140 PRINT@481,LEFT$(X$(PL),X);LEFT$(BL$,13);LEFT$(X$(P
L),17-X)
150 PRINT@192+SX,"V";:HX=SX
160 IF (PL=EN AND T>35) OR RND(17)>PL THEN 180
170 SK=SK+1:PRINT@448+RND(13)+X,"O";
180 X=X+DX:IF X<L THEN DX=1:R=RND(8)+7:GOTO 200
190 IF X>R THEN DX=-1:L=RND(5)+3
200 NEXT T,PL:IF SF THEN 300
210 EN=EN+1:IF EN>7 THEN EN=7
220 PRINT@480:FOR T=1 TO 70:GOSUB 2000
230 PRINT "YOU HAVE REACHED THE CORE!!!   ";:NEXT T
240 CLS:PRINT "SCORE:":FOR T=1 TO SK:SC=SC+100
250 GOSUB 2000:PRINT@6,SC:NEXT T
260 PRINT "SHIPS LEFT:";4-SH
270 PRINT:PRINT "PRESS ANY KEY TO CONTINUE."
280 K$=INKEY$:IF K$<>"" THEN 280
290 K$=INKEY$:IF K$="" THEN 290 ELSE 80
300 PRINT@192+SX,SP$;
310 FOR T=50 TO 200 STEP 50:GOSUB 2000:GOSUB 2000
320 PRINT@224+SX,CHR$(39+RND(4));:NEXT T
330 CLS:PRINT "SCORE:":FOR T=1 TO SK:SC=SC+10
340 GOSUB 2000:PRINT@6,SC:NEXT T
350 PRINT "SHIPS LEFT:";3-SH:PRINT
360 PRINT:IF SH<>3 THEN 390
370 PRINT "THE GAME IS OVER!":PRINT
380 PRINT "PRESS <P> TO PLAY AGAIN":GOTO 400
390 PRINT "PRESS <C> TO CONTINUE";
400 PRINT " OR <Q> TO QUIT."
410 K$=INKEY$:IF K$="" THEN 410
420 GOSUB 1000:IF K$="Q" THEN CLS:END
430 IF K$="P" AND SH=3 THEN 70
440 IF K$="C" AND SH<3 THEN SH=SH+1:GOTO 80 ELSE 410
1000 K=ASC(K$):K$=CHR$(K-(K>96)*(K<123)*32):RETURN
2000 SOUND T+25,1:RETURN
```

Tandy Models III & 4 (Model III mode)/*Space Race*

```
10 CLEAR 1000:DIM X$(7)
20 L$="B":R$="N"
30 SP$=CHR$(32):BL$=STRING$(40,32)
40 FOR X=1 TO 7:X$(X)=STRING$(44,192-X):NEXT X
50 SC=0:EN=5:SH=1
60 SK=0:SX=22:HX=SX:X=10:DX=1
70 CLS:SF=0:FOR PL=1 TO EN:L=10:R=30
80 FOR T=1 TO 50:K$=INKEY$:IF K$="" THEN 100
90 GOSUB 1000 :SX=SX+(K$=L$)-(K$=R$)
100 PRINT@450+HX,SP$;:IF PEEK(15874+SX)=32 THEN 120
110 T=50:PL=EN:SF=-1:GOTO 180
120 PRINT@967,LEFT$(X$(PL),X);LEFT$(BL$,14);LEFT$(X$(P
L),37-X)
130 PRINT@450+SX,"V";:HX=SX
140 IF (PL=EN AND T>35) OR RND(17)>PL THEN 160
150 SK=SK+1:PRINT@903+RND(12)+X,"O";
160 X=X+DX:IF X<L THEN DX=1:R=RND(18)+15:GOTO 180
170 IF X>R THEN DX=-1:L=RND(11)+3
180 NEXT T,PL:IF SF THEN 280
190 EN=EN+1:IF EN>7 THEN EN=7
200 PRINT@960,"":FOR T=1 TO 70
210 PRINT "YOU HAVE REACHED THE CORE!!!   ";:NEXT T
220 CLS:PRINT "SCORE:":FOR T=1 TO SK:SC=SC+100
230 PRINT@6,SC:FOR D=1 TO 15:NEXT D,T
240 PRINT "SHIPS LEFT:";4-SH
250 PRINT:PRINT "PRESS ANY KEY TO CONTINUE."
260 K$=INKEY$:IF K$<>"" THEN 260
270 K$=INKEY$:IF K$="" THEN 270 ELSE 60
280 PRINT@386+SX,SP$;:FOR T=1 TO 20
290 POKE 15874+SX,39+RND(4):FOR D=1 TO 10:NEXT D,T
300 CLS:PRINT "SCORE:":FOR T=1 TO SK:SC=SC+10
310 PRINT@6,SC:FOR D=1 TO 20:NEXT D,T
320 PRINT "SHIPS LEFT:";3-SH:PRINT
330 PRINT:IF SH<>3 THEN 360
340 PRINT "THE GAME IS OVER!":PRINT
350 PRINT "PRESS <P> TO PLAY AGAIN";:GOTO 370
360 PRINT "PRESS <C> TO CONTINUE";
370 PRINT " OR <Q> TO QUIT."
380 K$=INKEY$:IF K$="" THEN 380
390 GOSUB 1000:IF K$="Q" THEN CLS:END
400 IF K$="P" AND SH=3 THEN 50
410 IF K$="C" AND SH<3 THEN SH=SH+1:GOTO 60 ELSE 380
1000 K=ASC(K$):K$=CHR$(K-(K>96)*(K<123)*32):RETURN
```

COMPUTERS WE COVER

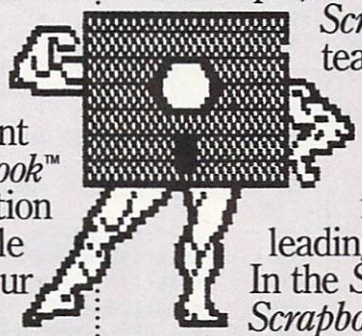
We regularly present two or more programs in each issue for the Apple II series; Atari 400/800, 600/800XL, & 130XE; Commodore 64 & 128 (in C 64 mode); IBM PC and compatibles; and Color Computer. However, occasionally we have to omit versions when a program requires capabilities that some of these computers lack. For example, many Microtones programs can only run on computers that have three voices, which eliminates the Apple II series; IBM PC and compatibles (except the PC*jr* with Cartridge BASIC and the Tandy 1000); and Tandy Models III, 4, and Color Computer.

In addition, we publish at least one program each issue for the Adam, Macintosh, Tandy Models III/4, TI-99/4A, and VIC-20. In the future, we also hope to cover the Atari 520ST and the Amiga. This month, these programs can be found here in The Programmer.

GET ONE FREE. *Buy one* Graphics Scrapbook, *and we'll send you a free* Graphics Scrapbook *of your choice. Send your receipt and Proof of Purchase (located on the inside of the* Graphics Scrapbook *box) to Free* Scrapbook *offer, c/o Epyx, Inc. Please specify which* Scrapbook *you'd like, as well as your computer system. Offer good 3/1/87 to 6/30/87.*

There are two things almost everyone has in common. An active imagination. And a tough time putting it on paper.

But now we present our *Graphics Scrapbook*™ series. A huge collection of pictures that enable you to easily bring your creative inspirations to The Print Shop,™ PrintMaster™ or Create a Calendar.



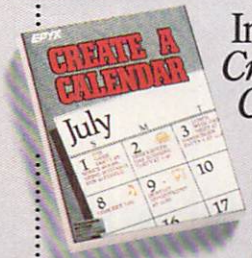
Over a hundred eye-catching pictures on every disk.

On each disk there are over 100 unique pictures. For example, in our *School Scrapbook,* teachers and students will find everything from cheerleading to finals. In the *Sports Scrapbook,* dozens of sports, mascots and trophies. In the *Off the Wall Scrapbook,* well, just expect the unexpected. And plenty more Scrapbooks are coming. So even if you can't draw a straight line, it's okay.

As long as you make a straight one to the offer below.

Apple & Compatibles, C64/128, IBM & compatibles.

ALLOW US TO DRAW YOUR ATTENTION.



Time flies. It might as well look snazzy as it goes by.

Introducing *Create A Calendar.* Our simple, powerful tool that lets you design daily, weekly, monthly or yearly calendars. In moments.

Among numerous features, it includes graphics, borders and fonts for just about every occasion. Or use your own pictures from the Graphics Scrapbooks or Print Shop compatible graphics disks.

What's more, it lets you write multiple lines of text on every date. To make it easy to keep track of everything you're supposed to do. And everything you've done. So this year, go ahead and make your own calendars.

There couldn't be a nicer way to pass the time. EPYX

USE OUR PREVIEW DISK TO DRAW YOUR OWN CONCLUSION. *Send your name, address, phone number, computer type, and a check or money order for $1.50 to Calendar/Scrapbook Preview, P.O. Box 8020, Redwood City, CA 94063. Canadian orders add 50¢ postage. 6-8 weeks delivery. Expires 8/30/87. Valid only in cont. U.S. and Canada.*

The Print Shop is a trademark of Broderbund Software, Inc. Printmaster is a trademark of Unison World, Inc. Graphics Scrapbook is a trademark of Epyx, Inc.
© 1986 Epyx, Inc.

CIRCLE READER SERVICE 17

THE UNFOUND COMPOUND

BY KAREN KANE

You are a chemistry professor at a major university and must stay on the cutting edge of new and exciting developments in the discipline. One evening, while experimenting with some of the rare elements, you accidentally create a new chemical compound. Extensive lab tests show that the compound—which you have dubbed Kanium—can exist in a solid, liquid, or gaseous state, and decomposes at a rapid rate. What's more, Kanium demonstrates properties so versatile that it could revolutionize present technology. You even suspect that the substance—in its gaseous form—could neutralize the disastrous effects of a nuclear explosion.

This is your chance to prove yourself to the scientific community—to make history, but you have no idea how to re-create the compound. So you set out on a worldwide search for natural sources of Kanium.

You are equipped with aircraft that will fly as high as 10 kilometers above sea level; diving gear and drills that will lower you to 10 kilometers below sea level; and tools to help you comb the mountains, deserts, and jungles of the earth. Most important, you carry your homemade Kanometer, a device that uses Kanium's strong, quasi-magnetic attraction to itself to sense the compound's presence in any state. Your Kanometer will give a distance reading but will not indicate the direction in which the substance can be found.

FIND IT FAST

To find the Kanium, type in the version of *Kanium Quest* for your computer and run it. Then, all you have to do is enter a whole number for latitude (from -90 degrees South to 90 degrees North), longitude (from -180 degrees West to 180 degrees East), and altitude (from -10 kilometers below sea level to 10 kilometers above sea level). For example, if you want to begin your search off the shores of Kill Devil Hills, North Carolina, you might enter 36,-75,-5 for latitude, longitude, and altitude. The Kanometer will tell you how far you are from the nearest source of Kanium and how many weeks are left before your supply of Kanium decomposes; and, it will ask for your next search position. By examining the Kanometer readings, you can narrow in on the powerful new chemical substance Kanium and become world famous for your find!

Time, however, is your only obstacle. Because you have only a small amount of Kanium for your Kanometer, you must locate more before the sample decomposes.

NOTE: *Once you find the exact coordinates of the Kanium, it might be fun to look them up in an atlas to see where your search led you.*

Kanium Quest *was inspired by a similar program submitted by Dr. Michael W. Ecker, editor and publisher of the* Recreational & Educational Computing Newsletter.

Adam/*Kanium Quest*

```
10 LOMEM: 29000:DIM ut$(1):ut$(0) = "":ut$(1) = "s"
20 FOR m = 28000 TO 28005:READ t:POKE m,t:NEXT m
30 HOME:PRINT "Press any key to start.":CALL 28000
40 t = RND(1):k = PEEK(64885):IF k = 0 THEN 40
50 fa = .01745329:n = INT(RND(1)*31)+20:ct = 0
60 ga = INT(RND(1)*181)-90:go = INT(RND(1)*361)-180
70 gh = INT(RND(1)*21)-10:hr = 6379+gh
80 xr = hr*SIN((90-ga)*fa)*COS(go*fa)
90 yr = hr*SIN((90-ga)*fa)*SIN(go*fa)
100 zr = hr*COS((90-ga)*fa):HOME
110 PRINT "What is your search position"
120 PRINT "in latitude, longitude, and "
130 INPUT "altitude? ";a,b,c
140 IF INT(a) <> a OR INT(b) <> b OR INT(c) <> c THEN
110
150 IF ABS(a) > 90 OR ABS(b) > 180 OR ABS(c) > 10 THEN
 110
160 ct = ct+1:r = 6379+c
170 x = r*SIN((90-a)*fa)*COS(b*fa)
180 y = r*SIN((90-a)*fa)*SIN(b*fa)
190 z = r*COS((90-a)*fa)
200 d = INT(SQR((x-xr)^2+(y-yr)^2+(z-zr)^2)+0.5)
210 PRINT:IF d = 0 THEN 320
220 PRINT "You are ";d;" kilometer";ut$(d > 1)
230 PRINT "away from the nearest source "
240 PRINT "of Kanium.":PRINT
250 IF ct = n THEN 280
260 PRINT "In ";n-ct;" week";ut$((n-ct) > 1);" the Kan
ometer's"
270 PRINT "Kanium will decompose.":PRINT:GOTO 110
280 PRINT "Too bad, professor."
290 PRINT "Your supply of Kanium has"
300 PRINT "decomposed, and so has your"
310 PRINT "chance at fame and fortune.":END
320 PRINT "Congratulations, professor!"
330 PRINT "After ";ct;" week";ut$(ct > 1);" of searchi
ng,"
340 PRINT "you finally located the Kanium.":END
1000 DATA 62,0,50,117,253,201
```

Apple II series/*Kanium Quest*

```
10 DIM UT$(1):HOME:UT$(0) = "":UT$(1) = "S"
20 FA = .01745329:N = INT(RND(1)*31)+20:CT = 0
30 GA = INT(RND(1)*181)-90:GO = INT(RND(1)*361)-180
40 GH = INT(RND(1)*21)-10:HR = 6379+GH
50 XR = HR*SIN((90-GA)*FA)*COS(GO*FA)
60 YR = HR*SIN((90-GA)*FA)*SIN(GO*FA)
70 ZR = HR*COS((90-GA)*FA)
80 PRINT "WHAT IS YOUR POSITION IN LATITUDE,"
90 INPUT "LONGITUDE, AND ALTITUDE? ";A,B,C
100 IF INT(A) <> A OR INT(B) <> B OR INT(C) <> C THEN
80
110 IF ABS(A) > 90 OR ABS(B) > 180 OR ABS(C) > 10 THEN
 80
120 CT = CT+1:R = 6379+C
130 X = R*SIN((90-A)*FA)*COS(B*FA)
140 Y = R*SIN((90-A)*FA)*SIN(B*FA)
150 Z = R*COS((90-A)*FA)
160 D = INT(SQR((X-XR)^2+(Y-YR)^2+(Z-ZR)^2)+0.5)
170 PRINT:IF D = 0 THEN 260
180 PRINT "YOU ARE ";D;" KILOMETER";UT$(D > 1);" AWAY
FROM"
190 PRINT "THE NEAREST SOURCE OF KANIUM.":PRINT
200 IF CT = N THEN 230
210 PRINT "IN ";N-CT;" WEEK";UT$((N-CT) > 1);" THE KAN
OMETER'S KANIUM"
220 PRINT "WILL DECOMPOSE.":PRINT:GOTO 80
```

```
230 PRINT "TOO BAD, PROFESSOR.  YOUR SUPPLY OF"
240 PRINT "KANIUM HAS DECOMPOSED, AND SO HAS"
250 PRINT "YOUR CHANCE AT FAME AND FORTUNE.":END
260 PRINT "CONGRATULATIONS, PROFESSOR!"
270 PRINT "AFTER ";CT;" WEEK";UT$(CT > 1);" OF SEARCHI
NG,"
280 PRINT "YOU FINALLY LOCATED THE KANIUM.":END
```

Atari 400/800, 600/800XL, & 130XE/*Kanium Quest*

```
10 DIM UT$(3):PRINT CHR$(125):DEG
20 UT$(1)="S":UT$(2)=CHR$(30):UT$(3)=CHR$(31)
30 N=INT(RND(1)*31)+20:CT=0
40 GA=INT(RND(1)*181)-90:GO=INT(RND(1)*361)-180
50 GH=INT(RND(1)*21)-10:HR=6379+GH
60 XR=HR*SIN(90-GA)*COS(GO)
70 YR=HR*SIN(90-GA)*SIN(GO):ZR=HR*COS(90-GA)
80 TRAP 80
90 PRINT "WHAT IS YOUR POSITION IN LATITUDE,"
100 PRINT "LONGITUDE, AND ALTITUDE";:INPUT A,B,C
110 TRAP 40000:IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C
THEN 80
120 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 80
130 CT=CT+1:R=6379+C
140 X=R*SIN(90-A)*COS(B)
150 Y=R*SIN(90-A)*SIN(B):Z=R*COS(90-A)
160 D=INT(SQR((X-XR)^2+(Y-YR)^2+(Z-ZR)^2)+0.5)
170 PRINT :IF D=0 THEN 260
180 PRINT "YOU ARE ";D;" KILOMETER";UT$((D<2)+1);" AWA
Y FROM"
190 PRINT "THE NEAREST SOURCE OF KANIUM.":PRINT
200 IF CT=N THEN 230
210 PRINT "IN ";N-CT;" WEEK";UT$(((N-CT)<2)+1);" THE K
ANOMETER'S KANIUM"
220 PRINT "WILL DECOMPOSE.":PRINT :GOTO 80
230 PRINT "TOO BAD, PROFESSOR.  YOUR SUPPLY OF KANIUM"
240 PRINT "HAS DECOMPOSED, AND SO HAS YOUR"
250 PRINT "CHANCE AT FAME AND FORTUNE.":END
260 PRINT "CONGRATULATIONS, PROFESSOR!"
270 PRINT "AFTER ";CT;" WEEK";UT$((CT<2)+1);" OF SEARC
HING,"
280 PRINT "YOU FINALLY LOCATED THE KANIUM."
```

Commodore 64 & 128/*Kanium Quest*

```
10 DIM UT$(1):PRINT CHR$(147);CHR$(154)
20 UT$(0)="":UT$(1)="S"
30 FA=.01745329:N=INT(RND(1)*31)+20:CT=0
40 GA=INT(RND(1)*181)-90:GL=INT(RND(1)*361)-180
50 GH=INT(RND(1)*21)-10:HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GL*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GL*FA)
80 ZR=HR*COS((90-GA)*FA)
90 C=11:PRINT "WHAT IS YOUR POSITION IN LATITUDE,"
100 PRINT "LONGITUDE, AND ALTITUDE";:INPUT A,B,C
110 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
120 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
130 CT=CT+1:R=6379+C
140 X=R*SIN((90-A)*FA)*COS(B*FA)
150 Y=R*SIN((90-A)*FA)*SIN(B*FA):Z=R*COS((90-A)*FA)
160 D=INT(SQR((X-XR)↑2+(Y-YR)↑2+(Z-ZR)↑2)+0.5)
170 PRINT:IF D=0 THEN 260
180 PRINT "YOU ARE";CHR$(5);D;CHR$(154);"KILOMETER";UT
$(ABS(D>1));" AWAY FROM"
190 PRINT "THE NEAREST SOURCE OF KANIUM.":PRINT
200 IF CT=N THEN 230
210 PRINT "IN";N-CT;"WEEK";UT$(ABS((N-CT)>1));" THE KA
NOMETER'S KANIUM"
220 PRINT "WILL DECOMPOSE.":PRINT:GOTO 90
230 PRINT "TOO BAD, PROFESSOR.  YOUR SUPPLY OF"
240 PRINT "KANIUM HAS DECOMPOSED, AND SO HAS YOUR"
250 PRINT "CHANCE AT FAME AND FORTUNE.":END
260 PRINT "CONGRATULATIONS, PROFESSOR!"
270 PRINT "AFTER";CT;"WEEK";UT$(ABS(CT>1));" OF SEARCH
ING,"
280 PRINT "YOU FINALLY LOCATED THE KANIUM.":END
```

IBM PC & compatibles/*Kanium Quest*

This program has been tested and found to work on the following computers and hardware configurations using the BASICs shown: IBM PC w/Color/Graphics Monitor Adapter, w/Disk BASIC D2.00 or Advanced BASIC A2.00; IBM PCjr w/Cartridge BASIC J1.00; and Tandy 1000 w/GW-BASIC 2.02 version 01.01.00. It should also work on many other PC compatibles.

```
10 DIM UT$(1):KEY OFF:COLOR 7,0:CLS:RANDOMIZE:CLS
20 UT$(0)="":UT$(1)="s"
30 FA=1.745329E-02:N=INT(RND*31)+20:CT=0
40 GA=INT(RND*181)-90:GO=INT(RND*361)-180
50 GH=INT(RND*21)-10:HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GO*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GO*FA)
80 ZR=HR*COS((90-GA)*FA)
90 PRINT "What is your position in latitude,"
100 INPUT "longitude, and altitude";A,B,C
110 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
120 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
130 CT=CT+1:R=6379+C
140 X=R*SIN((90-A)*FA)*COS(B*FA)
150 Y=R*SIN((90-A)*FA)*SIN(B*FA):Z=R*COS((90-A)*FA)
160 D=INT(SQR((X-XR)^2+(Y-YR)^2+(Z-ZR)^2)+.5)
170 PRINT:IF D=0 THEN 270
180 PRINT "You are";:COLOR 2:PRINT D;:COLOR 7
190 PRINT "kilometer";UT$(ABS(D>1));" away from"
200 PRINT "the nearest source of Kanium.":PRINT
210 IF CT=N THEN 240
220 PRINT "In";N-CT;"week";UT$(ABS((N-CT)>1));" the Ka
nometer's"
230 PRINT "Kanium will decompose.":PRINT:GOTO 90
240 PRINT "Too bad, professor.  Your supply of"
250 PRINT "Kanium has decomposed, and so has"
260 PRINT "your chance at fame and fortune.":KEY ON:EN
D
270 PRINT "Congratulations, professor!"
280 PRINT "After";CT;"week";UT$(ABS(CT>1));" of search
ing,"
290 PRINT "you finally located the Kanium.":KEY ON:END
```

Macintosh w/Microsoft BASIC/*Kanium Quest*

```
10 DIM UT$(1):RANDOMIZE TIMER
20 UT$(0)="":UT$(1)="s"
30 FA=.01745329#:N=INT(RND*31)+20:CT=0
40 GA=INT(RND*181)-90:GO=INT(RND*361)-180
50 GH=INT(RND*21)-10:HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GO*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GO*FA)
80 ZR=HR*COS((90-GA)*FA)
90 INPUT "What is your search position in latitude, lo
ngitude, and altitude";A,B,C
100 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
110 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
120 CT=CT+1:R=6379+C
130 X=R*SIN((90-A)*FA)*COS(B*FA)
140 Y=R*SIN((90-A)*FA)*SIN(B*FA):Z=R*COS((90-A)*FA)
150 D=INT(SQR((X-XR)^2+(Y-YR)^2+(Z-ZR)^2+.5))
160 PRINT:IF D=0 THEN 250
170 PRINT "You are";D;"kilometer";UT$(ABS(D>1));" away
 from"
180 PRINT "the nearest source of Kanium.":PRINT
210 IF CT<>N THEN PRINT "In";N-CT;"week"UT$(ABS((N-CT)
>1));" the Kanometer's Kanium will decompose.":PRINT:G
OTO 90
220 PRINT "Too bad, professor.  Your supply of Kanium"
230 PRINT "has decomposed, and so has your "
240 PRINT "chance at fame and fortune.":GOTO 280
250 PRINT "Congratulations, professor!"
260 PRINT"After";CT;"week";UT$(ABS(CT>1));" of searchi
ng,"
270 PRINT "you finally located the Kanium."
280 PRINT:PRINT "Press any key to end."
290 IF INKEY$="" THEN 290 ELSE END
```

Tandy Models III & 4 & Color Computer w/Extended Color BASIC/*Kanium Quest*

```
10 DIM UT$(1):CLS
20 UT$(0)="":UT$(1)="S"
30 FA=.01745329:N=RND(31)+19:CT=0
40 GA=RND(181)-91:GL=RND(361)-181
50 GH=RND(21)-11:HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GL*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GL*FA)
80 ZR=HR*COS((90-GA)*FA)
90 PRINT "WHAT IS YOUR SEARCH POSITION IN LATITUDE, LO
NGITUDE, AND"
100 INPUT "ALTITUDE";A,B,C
110 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
120 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
130 CT=CT+1:R=6379+C
140 X=R*SIN((90-A)*FA)*COS(B*FA)
150 Y=R*SIN((90-A)*FA)*SIN(B*FA):Z=R*COS((90-A)*FA)
160 D=INT(SQR((X-XR)↑2+(Y-YR)↑2+(Z-ZR)↑2)+0.5)
170 PRINT:IF D=0 THEN 270
180 PRINT "YOU ARE";D;"KILOMETER";UT$(ABS(D>1))
190 PRINT "AWAY FROM THE NEAREST SOURCE OF KANIUM."
200 PRINT:IF CT=N THEN 230
210 PRINT "IN";N-CT;"WEEK";UT$(ABS((N-CT)>1));" THE KA
NOMETER'S"
220 PRINT "KANIUM WILL DECOMPOSE.":PRINT:GOTO 90
230 PRINT "TOO BAD, PROFESSOR.  YOUR SUPPLY";
240 PRINT "OF KANIUM HAS DECOMPOSED, AND"
250 PRINT "SO HAS YOUR CHANCE AT FAME AND"
260 PRINT "FORTUNE.":END
270 PRINT "CONGRATULATIONS, PROFESSOR!"
280 PRINT "AFTER";CT;"WEEK";UT$(ABS(CT>1));" OF SEARCH
ING,"
290 PRINT "YOU FINALLY LOCATED THE KANIUM.":END
```

TI-99/4A w/TI Extended BASIC/*Kanium Quest*

```
10 DIM UT$(1):: RANDOMIZE :: CALL CLEAR
20 UT$(0)="" :: UT$(1)="S"
30 FA=.01745329 :: N=INT(RND*31)+20 :: CT=0
40 GA=INT(RND*181)-90 :: GL=INT(RND*361)-180
50 GH=INT(RND*21)-10 :: HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GL*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GL*FA)
80 ZR=HR*COS((90-GA)*FA)
90 PRINT "WHAT IS YOUR SEARCH POSITION"
100 INPUT "IN LATITUDE, LONGITUDE, AND ALTITUDE? ":A,B
,C
110 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
120 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
130 CT=CT+1 :: R=6379+C
140 X=R*SIN((90-A)*FA)*COS(B*FA)
150 Y=R*SIN((90-A)*FA)*SIN(B*FA):: Z=R*COS((90-A)*FA)
160 D=INT(SQR((X-XR)↑2+(Y-YR)↑2+(Z-ZR)↑2)+0.5)
170 PRINT :: IF D=0 THEN 280
180 PRINT "YOU ARE";D;"KILOMETER";
190 PRINT UT$(ABS(D>1));"AWAY FROM THE NEAREST"
200 PRINT "SOURCE OF KANIUM." :: PRINT
210 IF CT=N THEN 240
220 PRINT "IN";N-CT;"WEEK";UT$(ABS((N-CT)>1));" THE KA
NOMETER'S"
230 PRINT "KANIUM WILL DECOMPOSE." :: PRINT :: GOTO 90
240 PRINT "TOO BAD, PROFESSOR.  YOUR"
250 PRINT "SUPPLY OF KANIUM HAS "
260 PRINT "DECOMPOSED, AND SO HAS YOUR"
270 PRINT "CHANCE AT FAME AND FORTUNE." :: END
280 PRINT "CONGRATULATIONS, PROFESSOR!"
290 PRINT "AFTER";CT;"WEEK";UT$(ABS(CT>1));" OF SEARCH
ING," :: PRINT "YOU FINALLY LOCATED THE"
300 PRINT "KANIUM." :: END
```

VIC-20/*Kanium Quest*

```
10 DIM UT$(1):PRINT CHR$(147);
20 UT$(0)="":UT$(1)="S"
30 FA=.01745329:N=INT(RND(1)*31)+20:CT=0
40 GA=INT(RND(1)*181)-90:GL=INT(RND(1)*361)-180
50 GH=INT(RND(1)*21)-10:HR=6379+GH
60 XR=HR*SIN((90-GA)*FA)*COS(GL*FA)
70 YR=HR*SIN((90-GA)*FA)*SIN(GL*FA)
80 ZR=HR*COS((90-GA)*FA)
90 C=11:PRINT "WHAT IS YOUR SEARCH"
100 PRINT "POSITION IN LATITUDE,"
110 PRINT "LONGITUDE, AND"
120 PRINT "ALTITUDE";:INPUT A,B,C
130 IF INT(A)<>A OR INT(B)<>B OR INT(C)<>C THEN 90
140 IF ABS(A)>90 OR ABS(B)>180 OR ABS(C)>10 THEN 90
150 CT=CT+1:R=6379+C
160 X=R*SIN((90-A)*FA)*COS(B*FA)
170 Y=R*SIN((90-A)*FA)*SIN(B*FA):Z=R*COS((90-A)*FA)
180 D=INT(SQR((X-XR)^2+(Y-YR)^2+(Z-ZR)^2)+0.5)
190 PRINT:IF D=0 THEN 320
200 PRINT "YOU ARE";D
210 PRINT "KILOMETER";UT$(ABS(D>1));" AWAY FROM"
220 PRINT "THE NEAREST SOURCE OF":PRINT "KANIUM."
230 PRINT:IF CT=N THEN 270
240 PRINT "IN";N-CT;"WEEK";UT$(ABS((N-CT)>1));" THE"
250 PRINT "KANOMETER'S KANIUM"
260 PRINT "WILL DECOMPOSE.":PRINT:GOTO 90
270 PRINT "TOO BAD, PROFESSOR."
280 PRINT "YOUR SUPPLY OF KANIUM"
290 PRINT "HAS DECOMPOSED, AND SO";
300 PRINT "HAS YOUR CHANCE AT"
310 PRINT "FAME AND FORTUNE.":END
320 PRINT "CONGRATULATIONS!"
330 PRINT "AFTER";CT;"WEEK";UT$(ABS(CT>1));" OF"
340 PRINT "SEARCHING, YOU FINALLY";
350 PRINT "LOCATED THE KANIUM.":END
```

TIPS TO THE TYPIST

1. Read instructions and program headings carefully.

2. Don't let fatigue and boredom contribute to inaccuracy. If you're new to programming, type in a longer program in easy stages, SAVEing each installment as you go.

3. Assume that every character in a program listing must be copied accurately if a program is to work.

4. Watch out for potential trouble spots. About 90 percent of all typing errors occur in DATA statements.

5. Be aware that our program listings are printed 54 characters wide. Thus, a single BASIC program "line" (sometimes called a "logical line") may appear as several lines in our listing. If you are typing along and reach the right margin of the printed listing, don't press RETURN or ENTER before checking to see if the program "line" you're typing really ends there.

6. To correct an error in a BASIC program line, type the line in again from the beginning, and press RETURN or ENTER to replace the old line.

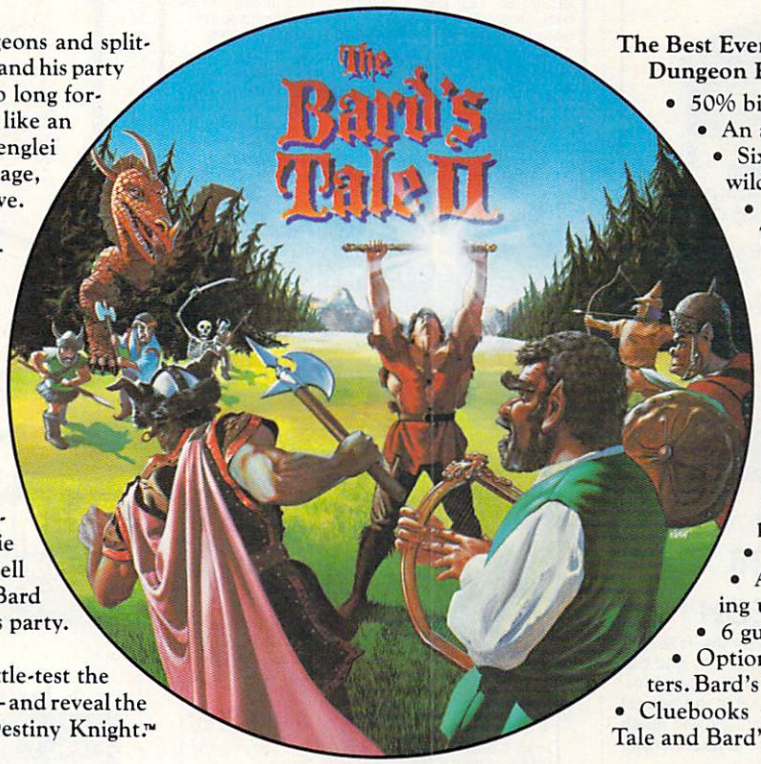
"The Bard is Back!"

From impossible dungeons and split-second snares, the Bard and his party emerge. The Sceptre, so long forgotten, gleams with power like an exploding sun. Even Phenglei Kai, the ancient archmage, bows his head in awe.

"I smell serpents!" Slipfinger squeals, stealing away like the thief he is. Two arch-dragons slither out of the ground, their eyes burning with the relentless fury of treasure lost.

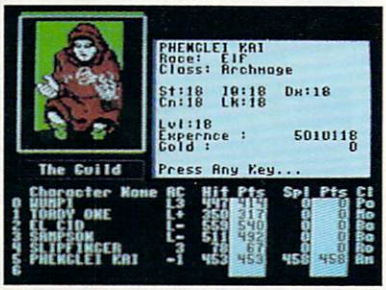
Protected behind the flame lizards, beyond the reach of normal weapons, a cackling wizard begins the eerie chants of a death spell. A spell that can finish the Bard and his party.

The time has come to battle-test the magic of the Destiny Wand – and reveal the awesome powers of The Destiny Knight.™

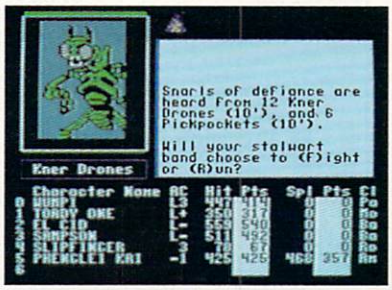


The Best Ever Dungeon Role-Playing Game

- 50% bigger than Bard's Tale.™
- An all-new story line.
- Six cities and a huge overland wilderness to explore.
- Dozens of new spells – 79 spells in all.
- New real-time dungeon puzzles. You have to get through them before the clock stops ticking.
- Summon and name monsters to become a permanent part of your party.
- More strategy in combat encounters – the weapons and spells you choose depend on the enemy's distance.
- A bank and casino.
- A starter-dungeon for building up your low-level characters.
- 6 guilds for easier game saving.
- Optional use of Bard's Tale characters. Bard's Tale experience not required.
- Cluebooks available for both Bard's Tale and Bard's Tale II.™



You get a new class of magic user – the Archmage. With 8 powerful spells like Heal All, Fanskar's Night Lance, and the awesome Mangar's Mallot.



There are over 100 monsters, like this Kner Drone. Many animated. All dangerous.

25 scrolling dungeon levels. All in color. All 3-D. Including 7 different Snares of Death, a new kind of real-time puzzle.

The Bard's Tale II

The Destiny Knight

from

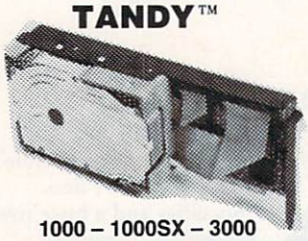
ELECTRONIC ARTS™

Optional use of characters from Ultima III™ or Bard's Tale.™ Apple version uses Wizardry™ characters, too!

HOW TO GET IT: Visit your retailer, or call 800-245-4525 (in CA call 800-562-1112) for VISA or Mastercard orders. To buy by mail, send a check, money order, or VISA or Mastercard information to Electronic Arts, P.O. Box 7530, San Mateo, CA 94403. The price is $39.95 for the Commodore 64 version, and $49.95 for the Apple version. Add $5 for shipping and handling ($7 Canadian). Allow 1-4 weeks for delivery. The Bard's Tale II and Electronic Arts are registered trademarks of Electronic Arts. Ultima is a registered trademark of Richard Garriott. Commodore is a trademark of Commodore Electronics Ltd. Wizardry is a trademark of Sir-Tech Software, Inc. For a copy of our complete catalog, send 50¢ and a stamped, self-addressed envelope to Electronic Arts Catalog, 1820 Gateway Drive, San Mateo, CA 94404.

INTERNAL

20 MEG HARD CARD FOR TANDY™



1000 – 1000SX – 3000
AND OTHER MS-DOS COMPUTERS
• DRIVE AND CONTROLLER ON ONE CARD
• AUTO PARK
• 65 MS AVERAGE ACCESS TIME
ONLY $549.95

HARD DISK MANAGER SOFTWARE – $49.95
STAR TECHNOLOGIES
7 WATER ST.
MASSENA, N.Y. 13662
ORDER NOW
315-764-9037
VISA–MCP–COD

CIRCLE READER SERVICE 49

LOW PRICED SOFTWARE FOR THE IBM PC AND COMPATIBLES

EDUCATIONAL: Is your child having problems at school? If so here are some software products that will enhance his or her learning:
• Spelling Quiz
• Geography U.S.A.
• Math Quiz
• Our Solar System

BUSINESS: High priced software can cut deeply into the bottomline before you can ever see the advantages of using it. Look to **RPS** for cost-effective software like:
• MASS (Activity Tracking System)
• R-T-K (A Right-To-Know Training System)

SCIENTIFIC: For those that are of an inquiring nature, **RPS** has programs that can satisfy your curiosity as well as provide a valuable understanding of today's world:
• RADCOM (Predicts downwind radiation levels from a nuclear accident)
• CHEMCOM Predicts downwind chemical levels from a hazmat accident)

Order TOLL FREE (Outside PA) 1-800-445-2531
Inside PA call 1-814-942-2833
or for a complete list write to:
RPS Corporation
1220 13th Avenue
Altoona, PA 16601
or send in the reader service card.

CIRCLE READER SERVICE 41

MARYMAC INDUSTRIES INC.
800-231-3680
Radio Shack® Tandy®
People you Trust to give you the very best!

TANDY CELLULAR PHONES TOO!

• Lowest Discount Prices
• Reliable Service
• Quality Products

"World's largest independent authorized Computer Dealer"
22511 Katy Fwy., Katy (Houston) Texas 77450
(713) 392-0747 Telex 774132

CIRCLE READER SERVICE 25

FREE CATALOGS!

TI 99/4A

C-64, C-128

TEACHER TECH™

Our catalogs, The Everything Book for the TI 99/4A, The Everything Book for the C-64, C-128 and our NEW Teacher Tech: Everything For Computer-Aided Learning Book, are packed full of the newest software, hardware, books, accessories and much more! The prices are low, the service is dependable, and you can order toll-free!!

Request your catalog today!

Order Toll Free
1-800-348-2778
In Indiana 1-800-225-6838

TENEX Computer Express™
or write:
P.O. Box 6578
South Bend, IN 46660
219-259-7051

CIRCLE READER SERVICE 53

Precision Data Products™
POLY PACK 5¼" DISKETTES
(From Leading Mfr.)

36¢ Each

• Blank Jackets
• WP Tabs
• Envelopes

100% Error Free Lifetime Warranty
Sold in Lots of 100 Only

SONY POLY PACK 3.5" DISKETTES
High Capacity Data Storage. Meets the requirements of all 3.5" Micro Diskette Drives.
SS 135TPI ..... **$1.17 ea.**
DS 135TPI ..... **$1.29 ea.**

Min. Order $25.00. Add 10% for less than 50 disks. S&H: Continental USA $4.00/100 or fewer disks. Foreign orders, APO/FPO, please call. MI residents add 4% tax. Prices subject to change without notice. Hours: 8:30 AM - 7:00 PM ET.

Precision Data Products
P.O. Box 8367, Grand Rapids, MI 49518
(616) 452-3457 • Michigan 1-800-632-2468
Outside Michigan 1-800-258-0028

CIRCLE READER SERVICE 36

IBM-APPLE COMPATIBILITY CARD
Runs on IBM and Compatible Clones or Tandy 1000 computers

CALL
1-800-872-9942
in Florida 1-305-962-8846

Free Brochure Explains how you can run Apple Programs on your compatible computer

Run Apple AND MS-DOS Separately or Simultaneously

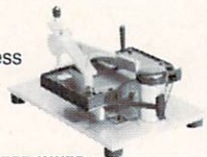
Compatible Peripherals, Inc.
P.O. Box 292071 – Dept.-F
Ft. Lauderdale, FL 33329
Dealer Inquires invited.

CIRCLE READER SERVICE 1

CUT RIBBON COST

Re-ink most fabric ribbons with only one machine

INK MASTER
$159.00



- No Fuss No Mess
- Simple to Use
- Versatile
- Adjustable

E-ZEE INKER
$39.50

BORG INDUSTRIES
525 Main Street
Janesville, Iowa 50647

ORDER TOLL-FREE:
800-553-2404
In Iowa: 319/987-2976
Visa/MC accepted

CIRCLE READER SERVICE 8

KNIT ONE

The exciting, new, easy-to-use software for IBM-compatable PC's that adjusts any knitting pattern to your gauge and size.

NOW YOU CAN

Adjust the pattern—not your knitting style

Alter a pattern to a new size

Only $79.95

Penelope Craft Programs, Inc.
Dept. F1
P.O. Box 1204
Maywood, NJ 07607

(201)-368-8379

CIRCLE READER SERVICE 33

Diskettes
1st 100 Callers ■ FREE Shipping

.47 ea. 5¼" DS/DD

MIN. ORDER - 20
100% CERTIFIED ERROR FREE
Includes: Sleeves, Labels, Tabs

☐ Please rush me _____ diskettes.
☐ Enclosed is my check or money order for $_____.
HOURS: 8 a.m. - 5 p.m. Monday thru Friday.
Order by BBS 5 p.m. - 8 a.m. EST, 24 hours on weekends.

TERMS: For fast delivery, send cashier's check or money order. Checks: allow 2 weeks. Michigan residents add 4% sales tax. COD orders add $2.

SHIPPING TOTAL ORDER	CONT. U.S.
$0-$15	$2.00
$15-$25	$3.00
$25-$54	$4.00
$54-Up	FREE

Pointe Data Products
1351 Alstott Drive • P.O. Box 631 • Howell, MI 48843
(517) 546-1309

CIRCLE READER SERVICE 35

ADAM™

CP/M 2.2 & ASSEMBLER (Disk,DP)	$35.00
ADAMCalc (DP)	$19.00
SmartLOGO (DP)	$19.00
Address Book Filer w/auto dialer	$25.00
Adam Direct Connect Modem w/sw	$45.00
LORAN DATA PACKS	$5.00-10/$35
ALPHA-ONE Data Packs	10/$19
Printer Ribbons	$5.50-3/$15
TRACTOR FEED For ADAM Printer	$65.00
MultiWRITE-64 column word processor	$36.00
SignSHOP-Print signs, poster, banners	$22.00
64K Memory Expander	$45.00
PACKCOPY-Backup SmartBasic, etc.	$29.00
COPYCART + Backup game cartridges	$15.00
Super Action Controllers w/Baseball Cartridge	$45.00
MicroWORKS-Complete fully integrated productivity system features database, spreadsheet, graphics, text editor	$27.00

**More Items In Stock

Send for **FREE CATALOG - EVERYTHING FOR ADAM****

ALPHA-ONE Ltd
1671 East 16th St., Suite 146
Dept. FC87, Brooklyn, NY 11229
(718) 336-7612 S/H $2.50 USA, $4.50 Canada

WE WILL NOT BE UNDERSOLD. WE WILL MEET OR BEAT ALL ADVERTISED PRICES FOR ANY ITEM THAT WE CARRY. JUST INCLUDE A COPY OF THE AD WITH YOUR ORDER!!

CIRCLE READER SERVICE 4

ADAM

ADAM IS ALIVE AND WELL

The NIAD ADAM User's Group is committed to the ADAM. We offer a COMPLETE line of service to our over 2000 members.

- Quality NEWSLETTER packed with FREE programs, reviews, and tips.
- PUBLIC DOMAIN LIBRARY of over 700 programs Including never released commericial software.
- DISCOUNT BUYING service carrying over 100 ADAM products: Modems, Color Printers, Software, Supplies, and Books.

== NEW PRODUCTS INCLUDE ==

- GRAPHIXPAINTER: HI-RES dot matrix graphics printing.
- GRAPHIXPIX: HI-RES color graphic pictures.
- MICROWORKS: Multi integrated programs

Send SASE for free catalog to:

NIAD Northern Illiana ADAM User's Group
PO Box 1317, Lisle, IL 60532
Phone: (312) 961-3529

MULTI-FUNCTION USER GROUP
MONTHLY NEWSLETTER-PUBLIC DOMAIN LIBRARY
DISCOUNT BUYING SERVICE FOR HDW & SFTW

CIRCLE READER SERVICE 29

The STITCH GRAPHER

DESIGN NEEDLECRAFT CHARTS

for Counted-Cross-Stitch. Needlepoint. Latch Hook, Knitting, etc. using a revolutionary new computer program—

The Stitch Grapher.

Graphs as large as 240 X 400 stitches with up to 30 symbols may be generated and printed with any of 3 grid styles along with a color chart. A unique windowing feature allows the designer to move, copy, rotate, mirror image, save and re-use previous designs.

The Stitch Grapher is compatible with the **64K Apple II and 256K IBM-PC** microcomputers. Disk plus 90-page spiral bound manual--$89.95. Dealer inquiries welcome. To place an order, or for complete information contact

COMPUCRAFTS
RFD 2 Box 216, Lincoln, MA 01773
(617) 259-0409

Apple version supports the Imagewriter and Scribe printers directly (depicted grid style is available for these printers only). Other dot matrix printers require graphics capable interface card or separate support software. IBM-PC version supports CGA, EGA graphics adapters and IBM / Epson compatible printers.

ROOTS II™

Organize your family history using ROOTS II, the most comprehensive genealogy program available for the IBM PC and compatibles. $195 plus applicable CA tax.

Call today for free brochure.

COMMSOFT ROOTS for YOU too!

COMMSOFT

2257 Old Middlefield Way, Ste. C
Mountain View, CA 94043
(415) 967-1900

(800) 32-ROOTS
in CA
(800) 53-ROOTS

CIRCLE READER SERVICE 10

And your Earls and Viscounts. If you've got royal ancestors, we have the noble software that can help you trace them down.

Family Roots and your Apple, Macintosh, IBM, Commodore, Kaypro, TRS-80,* and many others, offer individual and group sheets, charts, name indices, general search and text capabilities. Adapts to most disk drives, printers, and screens. You get more utility programs, plus lots of personal control. A comprehensive (new) manual is included.

Put up your dukes!

All for just $185.

Write or call today for more information and a free brochure.

Family Roots™

Quinsept, Inc.
P.O. Box 216
Lexington, MA 02173
Telephone: (617) 641-2930

American Express, Visa, and MasterCard gladly accepted.

* *Trademarks for Apple Computer Inc., International Business Machines, CBM, Inc., Digital Research and Tandy Corp.*

CIRCLE READER SERVICE 40

LOTTERY PLAYERS
$ $ $ $ $ $

Why guess at those lotto numbers! Your computer can give you a real edge in those big state lottos!

"The Lotto Program" will quickly tell you which numbers you should be playing! No random numbers, this program actually analyzes the past winners so you can project which numbers will likely come up in the next few drawings. You simply add the latest winners each week and the program does the rest. It's fun and easy to use and could be worth millions of dollars! APPLE, C/64, IBM and ATARI 800/130 versions are ONLY $21.95. The Super MacIntosh version is only $29.95. Visa, MC or checks welcome. Please add $1.50 for shipping. *We give good fast service!*

(513) 233-2200
SOFT-BYTE
P.O. BOX 556 FOREST PARK
DAYTON, OHIO 45405

CIRCLE READER SERVICE 46

Know Thy PC

Peeks 'n Pokes, a classic since 1982, shows you how to read and change your system configuration!

- Read number of drives (including types on AT class), type of machine, type of monitor, system memory, number of printers & COM ports.
- Use 4 printers as LPT1. Detect printer errors before printing — No more timeouts. Swap monitors on the fly.
- Plug characters into the keyboard buffer.
- Unprotect IBM and GW-BASIC programs saved with "P" option.
- DOS / BIOS function calls and interrupts from BASIC, Pascal, C and Fortran.
- Read file directory, read / change file attributes, get free disk space.
- Force diskette motor on for faster throughput.
- Boot system from BASIC and much, much more.

Not copy protected. No royalties in compiled programs. $45 + s / h ($3 US, $5 Canada, $18 others). Requires IBM or close compatible. In Georgia, add tax and call (404) 973-9272. MC / VISA OK.

MicroHelp, Inc. • 1-800-922-3383
2220 Carlyle Dr. • Marietta GA 30062

CIRCLE READER SERVICE 26

Handwriting Analyst

Discover the secret personalities of friends, business associates, or celebrities.

$49.95

Use the illustrated manual to answer easy multiple-choice questions, then choose either a quick or a detailed report. Amazingly insightful. Great for parties, personal relationships, and business deals. Ask for it at your local store or buy direct (check, Visa, or Mastercard—money back guarantee.).

IBM PC or Apple II

Ciasa
2017 Cedar St.
Berkeley, CA 94709
(415) 644-2771

PC Stationers
Personal Computer Stationery

SPECIALIZING IN TOP QUALITY, OFFSET PRINTED CONTINUOUS STATIONERY AND ENVELOPES.

HOLIDAY AND GENERAL PURPOSE LETTERHEAD.

Available in increments of 25 to 25000.

Add that personal touch—use our holiday stationery in place of traditional cards.

For home and business use.

Send your family, friends or clients letters, invitations, notices, etc. all on beautifully printed stationery.

Whether you use your computer, typewriter word processor, or your own hand, this quality stationery will impress.

We are offering a useable sample package of our stationery and envelopes. To receive these samples and order form please send $3.00 for postage and handling to:

PC Stationers
P.O. Box 1688
Brea, CA 92622-1688

COMING SOON: CONTINUOUS TRACTOR FEED GREETING CARDS FOR YOUR HOME OR OFFICE.

CIRCLE READER SERVICE 32

CLASSIFIED

ANNOUNCEMENTS

Let over 435,000 families see your ANNOUNCEMENT in this section of **FAMILY COMPUTING** classified! Call (212) 505-3587 now!!!

BOOKS/MANUALS

Enjoy Family Fun with your IBM PC or Compatible. PC Entertainment Journal shows you how. Expand your computer use and save money! Just $24 for Vol. 1 (10 issues & a free 3-ring binder) MoneyBack Guarantee PCEJ, 412 W. 5th, Newberg, OR 97132 or call (503) 538-7889. Visa/MC

BUSINESS OPPORTUNITIES

PERSONAL COMPUTER OWNERS **CAN EARN $1,000 TO $5,000** MONTHLY SELLING SIMPLE SERVICES PERFORMED BY THEIR COMPUTER. WORK AT HOME - IN SPARE TIME. GET FREE LIST OF 100 BEST SERVICES TO OFFER. WRITE: A.I.M.A.H., P.O. BOX 60369, SAN DIEGO, CA 92106-8369.

EARN MONEY AT HOME WITH YOUR COMPUTER! SEND FOR FREE DETAILS TO: NORTHEASTERN GIFTS 234-F NO. 16TH STREET BLOOMFIELD, NJ 07003

CAMPS

1,2,4,6 Week Programs. Ages 8-18 Coed Computer Training + Outdoor Activities Midwest Computer Camp 9392 Lafayette Unit C3, Indpls, IN 46278 (317) 297-2700

COMPUTER CAMP–University of Oregon Computer and Recreational program for ages 9-15. July 18-26. Call/Write 1553 Moss St. Eugene, OR 97403, 503-686-3537

CONSUMERS' GOODS

VIDEO TITLES FROM YOUR COMPUTER

NO Camera Necessary Second V.C.R. Character Generator

- Custom and Preset Titles
- Blank-Out Commercials
- Full Color Control
- Scrolling and Much More

$29.95 POST PAID

Specify Disk / Tape and APPLE II • ATARI • COM 64 • IBM • VIC 20

VIDEOWARE FREE INFO

19777 W. 12 Mile Rd. Suite 180, Dept FC, Southfield, MI 48076

Computer Program Puts Titles on Any Video Tape

UNIQUE GIFT FOR COMPUTER LOVER. T-SHIRTS AND SWEAT SHIRTS WITH POPULAR COMPUTER DOS COMMANDS. BLUE LETTERS GRAY BACKGROUND. CHILDREN S,M,L: T-SHIRT $7.50, SWEAT SHIRT $13.50. ADULT S,M,L,XL T-SHIRT $8.50, SWEAT SHIRT $15.50. JF SHIRTS, DEPT FC, PO BOX 2223 NORTH BABYLON, NY 11703

FOR FREE/TO SWAP

COMPUTER FACT BOOK
Learn about COMPUTERS the EASY Way
For **FREE** Information write:
COMPUTER & ARTS
5580 La Jolla Blvd., Suite 472-L,
La Jolla, CA 92037

HARDWARE

ADAM, APPLE & IBM Hardware/Software Send SASE. UNIVERSAL INTERFACE SYSTEMS Suite 133-20465 Douglas Cr. Langley, British Columbia V3A 4B6

ADAM 64K $30 US For orders or info Hard/Software—SPECTRUM ELECTRONICS 14 Knightswood Cr, Brantford, ONT N3R 7E6 Visa/Amex 519-753-4688

DISCOUNT SOFTWARE/HARDWARE
Apple, Commodore, TI-99, Atari, IBM-PC 30% below retail.TI ext.-BASIC $49 Star NP10 $179, Panasonic 1080I $215 Atari 1050 Disk Drive $139. Atari 130 XE Computer $139. Atari 1040 ST w/color monitor $850. TI writer $26. Over 500 software titles. Send $1 for cat. Specify computer 716-688-0469. **MULTI VIDEO SERVICES** BOX 246 E. AMHERST, NY 14051. Call after 6 PM

ADAM Discount Hardware & Software, Send a self-addressed stamped envelope for our new FREE FLYER, to DATA BACKUP, Box 335, Iona, ID 83427

Attention
IBM-APPLE COMPATIBILITY CARD
NOW RUN APPLE PROGRAMS ON ALL MS-DOS SYSTEMS
FREE BROCHURE
1-800-872-9942
IN FL. (305) 962-8846

COMMODORE CUSTOM CHIPS. For people who want to do their own repairs. Low Prices on IC's: 6510/6526–$9.95, 6567–$15, 6581–$12, PLA/82S100–$14 & others. User group specials/quantity prices avail. C-64 Power Supply $29. "The Commodore Diagnostician" A chart for diagnosing bad IC's $6.95 Kasara Microsystems, Inc., 33 Murray Hill Dr., Spring Valley, NY 10977 800-642-7634 (outside NY) 914-356-3131

ADAM HARDWARE KITS
64K Expanders $34.95, Centronics Interface $29.95. Assembled 80 Col Unit $235.00 SASE to Orphanware PO Box 324 Canal Fulton, OH 44614

SAVE HUNDREDS
Better, high quality PC's. Free Details. B&M Enterprises 4 Canadian Woods Rd., Marlboro, NJ 07746

ADAM, AMIGA, ATARI 520-ST OWNERS! Let The Adam Depot be your one stop Computer Center for all your HW/SW needs. Cat. 25¢, specify computer, Visa/MC The Adam Depot 419 Ridgway Ave Johnsonburg, PA 15845 (814) 965-2487

MISCELLANEOUS

LASERWRITER PRINTER/MACINTOSH
$0.75/page or $12/hr, plus $2 S/H. Fast, (714) 968-0661, Chinghai Inc. 9108 Helm, Fountain Vly, CA 92708

TI99/4A Owners: MICROpendium is a monthly only for the TI (since 2/84). $17/year or $2 for sample. Bx 1343, Round Rock, TX 78680 512-255-1512

TS2068 Floppy Disk Interface and CPM and more. Aerco, Box 18093, Austin, TX 78760. (512) 451-5874.

DUST COVERS WITH 5 YEAR GUARANTEE
Dust covers of softlined vinyl.
NEW! Factory Direct Pricing
Color: Black/Brown/Beige/Tan/White

ADAM 3 Piece Set	$15.16
ADAM Disk Drive	$ 5.60
IBM 2 Piece Set	$10.97
IBM PC JR. 2 Piece Set	$ 9.28
COMMODORE 64 Or 1541 Drive	$ 5.60
APPLE II, IIC, Or Drive	$ 5.60
APPLE IIE, or Dual Drive	$ 6.56

If we don't have the cover you need we can make it and guarantee it to fit. ADD $2 S/H: SASE for more info
J-CHECK SOFTWARE
P.O. Box 345, Millry, AL 36558
CK/MO/VISA/MC (205) 846-2360

ADAM KEYBOARD OVERLAYS
16 FOR $11: ASSORTED VENDOR PGMS
ADAM IRON-ON T-SHIRT DECAL
EACH $5: size 11x8: CARTOON ART
J.B. 6634 SW 41 ST. DAVIE, FL 33314

If your computer is important to you, INSURE IT! **SAFEWARE** provides full replacement of hardware, media and purchased software. As little as $39 a year covers fire, theft, power surge, earthquake, water damage, auto accident and more. Call Monday–Saturday.

SAFEWARE
THE INSURANCE AGENCY INC
2929 N. High Street., PO Box 02211
Columbus, OH 43202
(800) 848-3469 Nationwide
(614) 262-0559 Ohio

SMALL BUSINESS

Printed Forms 4 Your Home Business Send $2 for Full Color Catalog VBF, 1683 Cora, Des Plaines, IL 60018

SOFTWARE

FUN EDUCATIONAL SOFTWARE
Over 80 low-cost original programs. IBM, C64, TI99/4A. **Free** brochure.
KIDware
1380 156th NE, #H-2, Bellevue, WA 98007

SAVE 38% on Software!!!
Davidson's Math Blaster
Retail **$49.95** our price **$30.97**
Free price list. Specify Apple, IBM, C 64.
CREATIVE COMPUTER RESOURCES
Box 728, Grand Haven, MI 49417

FREE PROGRAMS!! TI99/Adam/all TRS80, Appl, IBMpc, C'dore, Timx. Send stamps! Ezra, Box 5222JU, San Diego, CA 92105

TI-99/4A Software/Best Selections **Free catalog** MICRO BIZ HAWAII P.O. Box 1108 Pearl City, HI 96782

$3 GETS YOU COOKING
Diskette cookbook series IBM-PC 25 cookbooks or create your own! Free catalog/demo disk $3. Vanilla Software, 3345F Lakeshore Oakland, CA 94610 415-482-4756

T.I. 99/4A OWNERS
1-800-USA-994A
Tech Help • Catalogs • Newsletters
IN FLORIDA 1-305-962-8846

ADAM! gHAAUG News AND two full Best of Lib datapacks. $12/YR! Send SASE Rt. 2 Box 2756, Pearland, TX. 77581

Affordable IBM Software
75c-$1.50 JR OK'ed FREE catalog
RUN, Box 2413, Woonsocket, RI 02895.

Great ADAM software. FREE catalog. The original Flippy DDPs 1/$2.95 VERIBACK copy/convert program or FASTRUN load/save pgm fast $14.95 Add $2.50 S&H. Practical Programs, P.O. Box 244, Kalamazoo, MI 49005

FREE SOFTWARE
Since 1982 SDC has distributed quality Public Domain/Shareware software for the IBM PC for only a distribution charge. For free sample catalogue, write **SDC**
Dept. FC87, 3707 Brangus, Georgetown TX 78628. **MONEY BACK GUARANTEE**

IBM PUBLIC DOMAIN SOFTWARE
Send for free list. We have games/ Dbases/Wrd Procs/Spprdhts/Graphics and lots more. Only $3.00 per disk.
JDX/F, PO Box 1561, Corona, CA 91718

NEW +4 AND C-128 SOFTWARE Games, educational, finance & stats. Write for info. **CARDINAL SOFTWARE** 14840 Build Amer. Dr., Woodbridge, Va 22191

5¼ DS/DD Diskettes made in the U.S.A. 37¢ each–minimum order 25 Disks Incl. sleeves, tabs & labels. Satisfaction guaranteed. 25 disks $9.25. NYS residents add sales tax. Plus $3.75 s/h. Check or MO to: E.C.S. 380 5th Ave., Suite 574 F. New York, NY 10018. 212-473-7192.

Computerized Record System
Computerized Business Letters I
COMPUTERIZED VEHICLE MAINTAINENCE
Hardcopy expandable IBM, CPM, 80 Comp
Send for catalog of products on disk. $2. Specify Computer
Input/Output SW Co.
PO Box 872548, Wasilla, AK 99687

PROGRAMS, IBM & compatible or APPLE at bargain prices less than $4.00/ disc. Send stamp for FREE CATALOG. PSCa, Box 1057-C, Capitola, CA 95010

ADAM & C-128 SOFTWARE
SASE gets info, specify computer
ADAMagic, 1634 N. Thompson DR.
Bay Shore, NY 11706

APPLE PUBLIC DOMAIN SOFTWARE
CAT. $2.00 OR 3.00 CAT. & DEMO DISK FREE DISK WHEN YOU PLACE ORDER.
B & L CONSULTANTS & SALES, BOX 461 WABASH, IN 46992 (219) 563-7650 VISA & M.C. IBM PUBLIC DOMAIN $1.00 CAT.

FREE IBM & APPLE SOFTWARE
Public Domain. Over 200 Disks! Games, Bus., Ed., Utly. Free Catalog. Blank disks 49¢ each. Send stamp/ name/address to: P.D. Club
P.O. Box 6877, Hwd., FL 33081

FREE PUBLIC DOMAIN SOFTWARE FLYER! IBM & Compatibles - (MS-DOS) Save $$ @ $3.50 per disk! Write to: AP-JP Inc, Box 1155, W. Babylon, NY 11704

THOROUGHBRED/HARNESS Handicapping $29.95 enhanced $49.95 **GREYHOUND** Handicapping $29.95 enhanced $49.95 **PRO FOOTBALL** Handicapping System $39.95. Specify disk/tape: Apple II+/e, Atari, IBM PC, COM 64/128, TI, TRS-80 Mod 3/4, Mod 100/200, Color. Add $2 post/handl. MC/VISA/CODs accepted. Free information. **SOFTWARE EXCHANGE**, Box 5382F, W. Bloomfield, MI 48033. Orders 1-800-527-9467

FREE SOFTWARE
IBM, C-64, C-128 & CP/M computers send SASE for info (list computer):
PUBLIC DOMAIN USERS GROUP
Box 1442-FA, Orange Park, FL 32067

INSTANT LETTERS with INSTA-LETTER. Not a word processor. This easy-to-use program contains over 35 skeleton letters such as request, thank you, complaint and more. You personalize it. For business or home. Uses APPLE II series with 80 col card & printer. Rush $49.95 to WordWeavers P.O. Box 617, Dept 113, Kent, Wa 98032 Wa. res add 8.1% tax. 4-6 wks deliv
SATISFACTION GUARANTEED!

TI-99/4A Software/Hardware bargains. Hard to find items. **Huge selection.** Fast service. Free catalog. **DYNENT** Box 690, Hicksville, NY 11801

IBM PC & JR SOFTWARE CLUB
Paradise Computer Works,
RD 1 Box 273A, Newark Valley, NY 13811

C 64 AND IBM-PC SOFTWARE CHEAP!!! Send for your catalog of game, home management, business, utility and educational software available and you will also receive a disk utility program listing free along with details on how to make money at home with your personal computer.
PACEWARE, INC Box 64-A
Pompano Beach, FL 33074

CLASSIFIED

FREE APPLE SOFTWARE
Over 1000 Public Domain Programs on 50 diskettes. $5 Each plus $1 shipping per order. Send $1 for catalog refundable with order.
C & H ENTERPRISES
Box 29243, Memphis, TN 38127

TANDY 1000. Programs/Newsletter Send for Info. Soda Pop SW, P O Box 653, Kenosha, WI 53141

Topnotch Software for IBM Pc/Ms-Dos/Pcjr. Business, educational, games, and utility disks. Send for catalog to: Morning Star Industry, P.O. Box 3095, Ann Arbor, Mi. 48106

DISCOUNT SOFTWARE for most computers FREE CATALOG. Sale: 5.25" DSDD disks 25/$13.95 ppd. WMJ Data Systems-FC 4 Butterfly Dr., Hauppauge, NY 11788

COLECO ADAM SOFTWARE
Send SASE for our catalog.
REEDY SOFTWARE
10085 60th Street, Alto, MI 49302

14-disk IBM-PC Pub. Dom. Lib $49
Below: IBM-PC req CGB or TRS-80 3/4
Bio-Charts II (screen printer) $25
Batter-Up - keep team stats $35
Calculus Area (drill/practice) $35
Geometry Proofs/Formulas $35
Algebra II (pack of 4) $35
Word Search Puzzel Producer $25
Specify machine-Cat. 2 stamps Alladin
1001 Colfax St. Danville, IL 61832

ADAM & APPLE SPECIALS: 40 to 70% OFF
ADAM Calc, Modems, Zaxxon, 2001, LOGO
ADAM TIPS & TRICKS 20 prog DDP $13
NEW! ADAM Multi-Skills Super Pk. $20
Graphics Ex: 3D/comp generated art pk
.44 stamps for ADAM/Apple catalog.
NICKELODEON GRAPHICS
5640 W. BROWN, GLENDALE, AZ 85302

C-64 FINEST PUBLIC DOMAIN PROGRAMS
On Disk MOST $1.50 *On Disk*
YOU pick the programs that YOU want
For list & description SEND SASE to:
JLH, Dpt F Bx 67021, Topeka, KS 66667

Outstanding Educational Software!
FREE CAT C64/APPLE/IBM, RENAISSANCE
Software, Box 4882, Lancaster, CA 93539

ADAM SOFTWARE & HARDWARE

RIBBONS	1/$5.00 3/$14.50	6/$25.00
BLANK DATA PACKS PRE-FORMATTED:		
E & T BRAND	1/$2.50 10/$20	20/$35
E & T FLIPPYDATA PACKS	1/$3	10/$25
LORAN BRAND	1/$3.50 10/$30	20/$45
SOFTPACK 1	checkbook/mailing	$18.95
BUSINESS 1	mailing/inventory	$19.95
BACKUP 3.0	copy program.	$18.00
TURBOLOAD	fast pgm. loader	$27.00
WIZARD PINBALL ARCADE		$19.95
MULTIWRITE	64 col. Word P.	$37.00
SIGNSHOP	banners, signs, etc.	$22.00
64K MEMORY EXPANDER		$45.00
RAMDISK uses the 64 ext		$29.95
PRINTER INTERFACE w/ cable		$55.95

SHIPPING – $2.50 U.S. $4.50 CANADA
VISA/MC. 22¢ STAMP FOR CATALOG TO:
E & T SOFTWARE P.O. BOX 821242
DALLAS TX 75382-1242 (214) 340-8913

MENU SELLS SOFTWARE
Thousands of programs for all computers can be ordered through MENU, plus you'll earn 20% SoftCredit. Order your guide today: **APPLE II GUIDE** ($9.95), Spring **MACGUIDE** ($4.95), **COMMODORE** or **IBM** (no charge). The purchase price of the guide is deducted from your first software order. Major credit cards. Call (800) THE-MENU or write to: MENU, 1520 S College Ave, Fort Collins, CO 80524

IBM PUBLIC DOMAIN SOFTWARE
$3.00 per disk. Over 650 volumes.
24 hour delivery. Send $3.00 for catalog/sample disk (refundable):
Island Software, 150 Hamakua Drive
Suite 339, Kailua, Hawaii 96734

APPLE PUBLIC DOMAIN SOFTWARE
Send $2 for sample disk & catalog. Refundable with order. Disks cost $2.50
CALOKE IND, Box 18477, Raytown, MO 64133

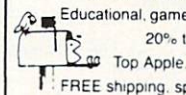
Rent Domain/Commercial-$2/5 Disk!
Software f/PC, Tandy, Sanyo, Amiga, KP
CSW (804) 853-3441, Bx 808, LAFB, Va 23665

STARFLEET 1 The space strategy hit for IBM PC is now on APPLE II, C64 and ATARI/ST **FREE CATALOG**
INTERSTEL, PO 57825, WEBSTER TX. 77598
CALL or WRITE TODAY (713) 333-3909

GAMES FOR IBM
Outstanding selection of arcade, adventure and educational games. Only $4/disk. Send large SASE for catalog. PC Arcade, 276-F Morehouse Rd., Easton, CT 06612

EXPAND YOUR GRAPHICS LIBRARY!
Easily convert Print Shop graphics to Print Master graphics or Print Master Graphics to Print Shop graphics. $19.95 + SBH 800-762-5645
Cardinal Software, 14840, Build America Dr., Woodbridge, VA 22191

SOFTWARE



Educational, games, sm. business
20% to 40% off retail
Top Apple, IBM programs
FREE shipping, specify computer
5th year of personalized service
FREE brochure. Soft Source-R
#D, 3451, Regan Rd. Joliet, IL 60435

CRIBBAGE – $19.95 US
Fabulous graphic simulation of this classic card game for IBM-PC/PCjr or compatibles. Requires DOS 2, CGA graphics, 128K. Add $2 s/h
STOCKING STUFFER GAMES
#307, 2150 W. Broadway
Vancouver, BC V6K 4L9 604-732-4323

7 IBM-PC DEMO programs on DS disk w/catalog $3. ¢heapware 4038 N. 9th St., St., Louis, MO 63147-3441

TI-99/4A – Generate credits for home videos. Send SASE for info. Newcastle, 13424 N. 33rd Pl, Phoenix, AZ 85032

!!!!!! HELP !!!!!!
Expand your child's knowledge with educational software from experts! 1500 titles from Grolier, Davidson, Scholastic, etc. Comprehensive catalog: Apple, Com, IBM. We're Specialist! $3.00 Visions-Educational Software
P.O. Box 834, Southfield, MI 48037

MERRIAM-WEBSTER CONTESTS
AUTO BINGO for C64/128. All Play-Offs and Tiebreakers. #10 SASE to A-B, 5668 Chagrin, Mentor, OH 44060

ATARI 800/XL/XE unique home/business/personal applications, artificial intelligence, entertainment software from $8.95! FREE 20-page CATALOG! Send 2 stamps: 25th Century, Box 8042-F, Long Island, NY 11802

RENT SOFTWARE FOR C64 & ST
Lowest prices. No membership fee. 100's of brand name programs.
Specify C64/128 or Atari ST.
Send $1.00 for catalog to:
Centsible Software
P.O. Box 930
St. Joseph, MI 49085
(616) 982-0327

CREATE BANNERS! Basic listing $3. Larry Cluff, 27712 SW Grahams Fy., Sherwood, OR 97140. Inquires SASE.

US $8.-Including disk: Thousands of famous business, education, games programs for Apple II/IIe/IIc and IBM/PC details US $1.- To Reliant P.O. Box 33610, Sheungwan, Hongkong.

NO FRILLS SOFTWARE FOR IBM PCs
ROADMASTER – car diagnostic $8.95
Answs to 100 car problems Req: DOS 2.
NOAHS ARK – fun arcade game $7.95
clean fun Req: DOS 2 + Color graphics
3R Co, 39 Bowman La, Kings Pk NY 11754

BE A LOTTO MILLIONAIRE!
New Lotto Picker Plus stores winning Lotto & Pick 3/4 numbers & uses probability outputs in order to give you the winning edge! All U.S. & Can. games included. Never Obsolete! $34.95 + 4.55 s/h. **ORDER NOW! 1-800-341-1950 #77** Save s/h, order by mail: **RIDGE**, 170 B'way, #201F, NYC 10038. Info/Dealers 718-317-1961. IBM, C64/128 versions.

FREE TANDY/IBM SOFTWARE public domain, B&J Enterprises Software, PO Box 485, Daleville, AL 36322

FREE for Apple II's, Tandy 1000, IBM-PC & XT and compatibles. Price list & description of Educational & Recreational Software. $7 to $19.95 This is not Public Domain Software. Dealer/School inquires welcomed. Call 817 277-2911 or write to Blocher's Custom Software, 2201 Summer Place Drive, Arlington, TX 76014

win $$$ LOTTO DISK $$$ win
Lotto-pick-4 pick-3 numbers. Send $19.95. PO Box 25466, Balto. MD 21217
IBM Compat. Lotsa winners 301-563-1523

LOTTERY—DAILY # ANALYZER!
Best # picking assistant available
If not 100% sat. you get 5 JVC disks
FREE . . . NO QUESTIONS ASKED
TI99/IBM + comps. copyable $24.95
SUNBURST SOFTWARE LTD.
PO Box 75, Brookhaven, NY 11719

12 Apple Math Programs for grades 1-7. Kids love them! $12 To: K Swenson 385 Jayne Ave. #103, Oakland, CA 94610

CODE PAL – $29.95
Learn & practice radio code.
Hobbiest-Education-Family Fun
IBM XT, AT & 100% Compatibles
Ck or M.O. To: GAM ENTERPRISES
541 W. Penn St., Butler, Pa 16001

BEAT THE STOCK MARKET
Software reveals **BUY & SELL SIGNALS** for your stock or index. Specify Commodore 64 or Vic 20. Requires superexpander. Send $49 MO To:
WALLSTREET GRAPHICS 824 Milwaukee St., Delafield, WI 53018. Allow 6-8 weeks.

FASTEXT 80 OWNERS
USAGE ENHANCEMENT SOFTWARE FOR: C128, + 4, TI 99/4A, SANYO, IBM COMPAT.
McKECHNIE, POB 2784, FAIRFAX, VA 22031

MATH MADE EASY
IBM PC & Comp. For 1-7 grade. Easy online instr. Complete user manual. ARITH: Add, Subtract; Multiply & Divide FRACTIONS: Simplify, Compare; and Add, Subtract, Multiply & Divide.
One-time offer: All 4 for $50;
2 for $27; 1 for $15 (No P&H in US)
SOFTWARE CONSULTANTS INC.
P.O. 4370, Denver, CO 80204 USA

BONANZA For your C-64 Only $19.50
Recieve: Monoply, Concentration, Backgammon, Mastermind, Yahtzee, and Othello. For 1 low price.
Send check to: PANTHER SOFTWARE
2230-1 Sesame, Memphis, TN 38134

POCKET Multiple Regression on any **SHARP** W/CE126P. Corr-t-DW-more $12
S Shaffer, 111 Hicks, Bkln, NY 11201

TELECOMPUTING

Unlimited VOICE/DATA Long-Distance ONLY $100 A MONTH!!! Details $1
Terrell Wholesale Systems
P.O. Box 1709, Corbin, KY 40701

USERS' GROUPS

AMIGA USERS' GROUP
Send $18 for Charter membership.
Box 3761, Cherry Hill, NJ 08034
(609)667-2526*VISA/MASTER-ADD$1

The PCjr
SURVIVAL KIT
Subscribe to The Junior Report, the IBM PCjr survival manual.

PCjr LOVERS!!!
THE JUNIOR REPORT:
The National Newsletter for you!
24 pages of articles, reviews, Q & A & much, much more. Acclaimed by: PC WORLD Sept. 86, COMPUTE! Mar 87 & USA TODAY Nov 6th, '86. Just $18/yr/12 issues, Canada $24 (US)
The PCjr Club, Dept. F, POB 59067
Schaumburg, IL 60159-0067

EVERY COMMODORE 64 FAMILY
should belong to this club.
For free info, send SASE to:
DISK-A-MONTH CLUB
Box 1919, Ocean Springs, MS 39564.

#1 ADAM USERS' GROUP
Receive "SPRITE CHASER" newsletter. Advanced updating, evaluations on programs, hardware, technical information direct from Coleco. Problem-solving-program exchange-discount buying service-etc.
Send $15 for charter membership to:
#1 ADAM USERS' GROUP
Box 3761-Attn: Jay Forman
Cherry Hill, NJ 08034
(609)667-2526*VISA/MASTER-ADD$1

ONE THOUSAND MAGAZINE
"Especially For Your **Tandy 1000!**" monthly support for your Tandy 1000 personal computer is here! Beginner's Luck, MS-DOS, Basic Listings, Editorials & reviews are just SOME of the topics covered on a monthly basis in One Thousand Magazine! We also have a software library available to all subscribers!
Available on newstands everywhere!
Send to:
One Thousand Magazine
2153 Muren Boulevard, Suite A
Belleville, IL 62221-4136
(618) 277-3526

Correspond with a user of your system type. Exchange software, ideas, & info. For your Compu-pal send $1 & sase to Com-connect 407 Maple Ln. Mansfield, OH 44906. Specify system

VIDEO GAMES

CARTRIDGES FOR VIDEO GAME-PLAYING MACHINES! ALL SYSTEMS! WE BUY/SELL RETAIL + WHOLESALE COMPUTER SOFTWARE TOO! FREE PRICE LIST! PLEASANT VALLEY VIDEO, DEPT. F, 8141 PL. VLY. RD., CAMDEN, OH 45311. 513-787-4707 (VOICE), 513-787-3777-(MODEM, BBS)

FREE List: We sell ATARI 2600, 5200 & Coleco and Intv cartridges.
VILLA VIDEO, Box 17131, Milw, WI 53217
Modems: our BBS (414) 265-5149, 24 Hrs

CAMPS

AN OPPORTUNITY UNLIKE ANY OTHER

The nation's largest computer camp offers all traditional camping activities and camaraderie in a beautiful setting. Your child will have exclusive use of a major brand microcomputer for at least 6 hours every day.

An experienced staff ratio of one to three and a computer ratio of one to one uncaps the creativity of young people. Students receive hands-on experience in robotics, graphics, color, sound, languages and telecommunications.

Complete details on the 1, 2, 4, and 8, week coed sessions for ages 8-18 are available in a free brochure. Call or write for yours!

Call (317) 297-2700 or write to
MIDWEST COMPUTER CAMP
9392 Lafayette Road, Unit C3, Indianapolis, IN 46278

CIRCLE READER SERVICE 28

Computer Camp JULY 18- JULY 26

The University of Oregon Computer Camp enters its fifth year of providing youth ages 9-15 with a challenging computer and recreational program. The camp features **Macintosh, IBM-PC, Apple IIe, Apple IIGS;** applications in **graphics, wordprocessing, databases, spreadsheets, simulations, programming; *Logo*** and ***AutoCAD.*** Other opportunities include tours of UO computer labs, rafting, and coast trips.

For more information call or write:

University of Oregon
Continuation Center
1553 Moss St.
Eugene, OR 97403
(503) 686-3537
or toll free in Oregon,
1-800-824-2714

CIRCLE READER SERVICE 55

Ribbon Land

QUALITY COMPUTER PRODUCTS
Order **HOTLINE** 1-800-221-4892
In PA or for information *CALL (215) 524-9760*

SPECIALS

Cordata Portable or Desktop IBM Compatable Computers ..... **ONLY $999.00**
Systems include 512K RAM, Hi-Res Monitor, Dual 360K Floppies, serial & parallel ports, IBM Graphics, plus 4 expansion slots. Also included are Dos 2.11, GW Basic & Tutorial.
BONUS: Order now & receive Integrated Software which includes: Spreadsheet, Data Base, Word Processing & Communication Applications.

NYLON Ribbons	Black		Color		Transfer	
Printer Type	EACH	6+	EACH	6+	EACH	4+
Anadex 6500/9500	7.50	7.00	—	—	—	—
*Apple Imagewriter, DMP, Prowriter	4.50	4.00	5.50	4.50	6.50	6.00
Apple Imagewriter II	4.50	4.00	10.00	9.00	—	—
Apple Scribe (Thermal)	5.00	4.50	—	—	—	—
Brother 1109, 1009, Comm. MPS 803	5.50	5.00	—	—	—	—
Canon A-40/50/55, 1080A/1088/1156	6.00	5.50	6.50	6.00	—	—
Comm. MPS801, Comrex 220, Axiom GP550, GP700	5.00	4.50	6.00	5.50	—	—
Commodore 1525	5.00	4.50	6.00	5.50	—	—
Epson AP80, Seikosha SP1000	NEW	—	—	—	—	—
Epson JX80	4.50	4.00	13.00	12.00	—	—
*Epson MX, FX, RX 80/85, Citizen 10/20	4.50	4.00	5.50	4.50	6.50	6.00
Epson MX, FX, RX 100/185, Citizen 15/25	6.00	5.50	7.00	6.50	—	—
Epson LQ 800	6.00	5.50	7.00	6.50	—	—
Epson LQ 1000	7.00	6.50	—	—	—	—
Epson LX 80/90, Homewriter 10	5.00	4.50	6.00	5.50	7.00	6.50
Epson LQ 1500	5.50	5.00	6.00	5.50	—	—
IBM Proprinter	5.50	5.00	6.50	6.00	—	—
Nec P2/P6	7.00	6.50	—	—	—	—
Nec P3/P7	8.00	7.50	—	—	—	—
*Okidata 82, 83, 92 & 93/Star SG 10	2.50	2.25	4.00	3.50	5.00	4.50
Okidata 182, 192 & 193	6.50	6.00	7.50	7.00	—	—
Okimate 20 (Thermal)	5.00	4.50	6.00	5.50	—	—
Panasonic 1080, 1090, 1091 & 1092	7.00	6.50	8.00	7.50	—	—
Smith Corona D 100/200, RS DMP 120	6.00	5.50	7.00	6.50	—	—
Star NX 10	7.00	6.50	—	—	—	—
Toshiba 1350, 1351, P1340, P351, 341	6.00	5.50	7.00	6.50	—	—

Colors: Red, Yellow, Blue, Green, Brown, Purple, *Orange & Silver.
Transfer Colors: Red, Yellow, Blue & Black.

MULTI-STRIKE Black Film Ribbons	EACH	6+
Apple LQP, Qume IV	5.00	4.50
Brother HR 15/35, Comrex II	5.50	5.00
Diablo Hi-Type II	3.50	3.00
Epson DX-10, Silver Reed	6.50	6.00
Juki 6100, IBM Selectric II, Tech III	4.00	3.50
Nec 3500	5.00	4.50
Nec 5500	5.00	4.50
Qume Letterpro 20	4.00	3.50
*Spirit 80, BMC-80, Legend 880, 808, 1080, 1380	6.00	5.50

*Available in Red, Blue & Brown. (Add $1.00 Each)

DISKS - 5 1/4" Verbatim Brand - 20 Pack
SSDD or DSDD ..... **.69 Each** 20 Pack of Labels & Sleeves **$2.20**

MacInker - Re-Ink Ribbons for about 5¢
Apple Imagewriter, DMP, Prowriter **41.95**
Epson MX, FX, RX 80/85/100/185/286 ..... **49.95**
Universal Base plus Driver Kit for Most Nylon Ribbons **64.95**
Ink Kit (Available in Red, Yellow, Blue, Green, Brown, Purple & Black) **8.00**

White Computer Paper - Micro-Perf 2500 Sheets **25.00**

Color Computer Paper - Red, Blue, Gold, Lt. Blue, Pink, Ivory, *Canary & Green.
100 Sheets ..... **$6.00** 600 Sheets or Rainbow Pack **$24.00**
*Not included in Rainbow Pack.

Color Envelopes - Invitation Size/Red, Blue, Gold, Lt. Blue & Pink.
50 Envelopes ..... **$4.50** 100 Envelopes ..... **$8.00** 250 Envelopes **$15.00**

PRINT HEAD CLEANING KITS - Helps prolong ribbon & print head life.
Apple Imagewriter I & II, DMP, Prowriter **8.00**
Epson MX, FX, RX 80/85, Citizen 10/20 ..... **8.00**
Epson LX-80/90, Homewriter 10 ..... **8.00**
Okidata 82, 83, 92 & 93, Star SG 10 ..... **8.00**
Panasonic 1080, 1090, 1091, 1092 ..... **8.00**

CALL FOR PRICING ON ALL HARD TO FIND RIBBONS!

School & Business Purchase Orders Accepted. PA residents add 6% Sales Tax. MC Visa, COD ORDERS Accepted.
Ribbon orders over $60 are shipped free, UPS Ground Only. All other orders add $4 S & H, UPS Ground Only. Prices subject to change without notice.

Ribbon Land • P.O. Box 506 • Exton • PA • 19341

CIRCLE READER SERVICE 42

READER SERVICE FREE INFORMATION

Readers are invited to learn more about our advertisers' products. This is a free service to FAMILY COMPUTING readers. Follow the directions below and the materials will be sent to you promptly and free of charge.

1. Circle the number(s) on the card that corresponds to the key number appearing on the advertisement. For advertisements with no number, please consult your local retail outlet or write to the address listed.
2. Simply mail the card. Postage is necessary. The literature you requested will be mailed to you directly, free of charge by the manufacturer.
3. Print or type your name and address on the attached card. To receive the requested information, answer all questions on the reader service card.
4. Circle number 138 on the reader service card if you wish to subscribe to FAMILY COMPUTING. You'll be billed for 12 big issues for only $19.97.
5. Do not use the card for change of address. Please use the subscription service form in the magazine.

AIM HIGH

PRESENTING TECHNOLOGY THAT LETS YOU PROGRAM YOUR OWN DESTINY.

Electronics and computer equipment can be state-of-the-art today. And ready for the garbage can tomorrow.

Demand for technology is changing that fast.

And the people who can stay on top of it can write their own ticket in this world.

That's the beauty of the Air Force.

We can put you to work with technology that you may not read about in magazines for years.

We can teach you how to make sense of the most intimidating circuitry in existence anywhere.

If you attend college, we'll pick up 75% of your tuition. You can even earn an associate degree from the Community College of the Air Force.

What does all that mean?

It means there's no telling where technology is going in the future.

But with Air Force training, you've always got a future to look forward to. For more information, call an Air Force recruiter at 1-800-423-USAF.

AIR FORCE

Uncompromising performance at an incredible price.

The Tandy® Color Computer 3

More colors, superb graphics, greater power for only $219.95

Our most powerful Color Computer

Finally, the ideal computer for your family: our most advanced Color Computer *ever.* The Color Computer 3™ is great for small business and home applications. You get the advantages of a high-priced computer—without the high price!

A rainbow at your fingertips

The Color Computer 3 features 128K memory (expandable to 512K), for real programming power. With the CM-8 High-Resolution Monitor (26-3215), you can create razor-sharp graphics using 64 colors.

The Color Computer 3's Extended BASIC features 21 new commands that allow you to alternate screens, colors, and backgrounds—all at a higher resolution and with a greater variety of colors.

Compatible and expandable

Best of all, the new Color Computer 3 is compatible with software and accessories designed for the Color Computer 2, including a wide selection of educational, personal-management and game programs. Expand with a modem or printer, or add a disk drive to create a sophisticated disk system and open the door to a library of advanced disk software.

In today's confusing computer market, the advanced Color Computer 3 (26-3334) is your affordable alternative. Come see it today at your local Radio Shack.

Radio Shack®
The Technology Store™
A DIVISION OF TANDY CORPORATION

Price applies at Radio Shack Computer Centers and participating stores and dealers. Monitor and accessories sold separately.

CIRCLE READER SERVICE 52